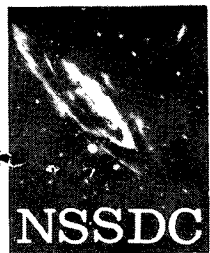


541 p.



71-20

# Data Catalog of Satellite Experiments

Supersedes All Previous Editions

DECEMBER 1971

(NASA-TM-X-67707) DATA CATALOG OF  
SATELLITE EXPERIMENTS (NASA) Dec. 1971  
541 p  
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NATIONAL SPACE SCIENCE DATA CENTER

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION • GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.

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Springfield, VA. 22151

541 p.

NSSDC 71-20

NATIONAL SPACE SCIENCE DATA CENTER  
DATA CATALOG  
OF  
SATELLITE EXPERIMENTS

(Supersedes All Previous Editions)

National Space Science Data Center  
Goddard Space Flight Center  
National Aeronautics and Space Administration  
Greenbelt, Maryland 20771

December 1971

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## INTRODUCTION

### Purposes and Organization of This Catalog

The purposes of the Data Catalog of Satellite Experiments are to announce the availability of experimental space science data, to describe these data, and to inform potential data users of the services provided by the National Space Science Data Center (NSSDC). This edition of the Catalog is the first cumulative edition published since January 1969 and supersedes all previous editions.

This Catalog is divided into three sections, each of which is described briefly in an introductory paragraph immediately preceding the section. Readers are urged to consult these introductory paragraphs since they provide information regarding the organization and contents of the sections that is necessary for the effective use of this document. Section 1, Data Description, contains descriptions of data available at or through NSSDC as well as descriptions of the experiments and spacecraft from which the data originated. Section 2, Supporting Data, contains brief descriptions of space environment models and programs distributed by NSSDC. Section 3 is a series of indexes that contains: (1) a listing of all spacecraft, experiment, and data descriptions presented in Section 1 plus tables indicating the period for which each spacecraft was operational; (2) an index of all spacecraft described here, identified by common names and alternate names; (3) a listing of the original experiment institutions for all experiments described; (4) a listing of the investigators associated with the experiments and their current affiliations; and (5) an index of all experiments sorted by phenomenon measured. This phenomenon-measured index provides an indication of the areas for which data are available through NSSDC. Because it is felt that this index will be the most helpful for readers of this Catalog in locating descriptions of specific types of data, it has been placed at the end of the Catalog, beginning on page 495.

### Data Availability, Costs, and Ordering Procedures

The purpose of the National Space Science Data Center is to provide data and information from space science experiments in support of additional studies beyond those performed by the principal investigators. Therefore, NSSDC will provide data and information upon request to any individual or organization resident in the United States. In addition, the same services are available to scientists outside the United States

through the World Data Center A (WDC-A) for Rockets and Satellites. Normally, a charge is made for the requested data to cover the cost of reproduction and the processing of the request. The requester will be notified of the cost, and payment must be received prior to processing the request. The Director of NSSDC may waive, as resources permit, the charge for modest amounts of data when they are to be used for scientific studies or for specific educational purposes and when they are requested by an individual affiliated with:

1. NASA installations, NASA contractors, or NASA grantees.
2. Other U.S. Government agencies, their contractors, or their grantees.
3. Universities and colleges.
4. State and local governments.
5. Non-profit organizations.

A user can obtain data in any of the following ways.

1. Letter request.
2. Data Request Form (contained at the end of this Catalog).
3. Telephone request.
4. On-site request.

Anyone who wishes to obtain data for a scientific study should specify the NSSDC identification number, the common name and/or number of the satellite and the experiment, the form of data, and the timespan of data requested. A requester should also specify why the data are needed, the subject of his work, the name of the organization with which he is affiliated, and any Government contracts he may have for performing his study.

When requesting data on magnetic tape, the user should specify whether he will supply new tapes prior to the processing, return the original NSSDC tapes after the data have been copied, or pay for new tapes.

The Data Center's official address for requests is:

~~National Space Science Data Center  
Code 601.4  
Goddard Space Flight Center  
Greenbelt, Maryland 20771  
Phone: 301 982-6695~~

Users who reside outside the U.S. should direct requests for data to:

World Data Center A for Rockets and Satellites  
Code 601  
Goddard Space Flight Center  
Greenbelt, Maryland 20771 U.S.A.  
  
Phone: 301 982-6695

Also, since WDC-A now maintains listings of rocket experiments, all requests for information about rocket launchings and the experiments flown should be directed to this institution.

### NSSDC Facilities and Services

NSSDC provides facilities for reproduction of data and for on-site data use. Resident and visiting scientists are invited to study the data while at the Data Center. The Data Center staff will assist users with additional data searches and with the use of equipment. In addition to satellite and space probe data, the Data Center maintains some correlative data and information on other correlative data that may be related to a specific request. These correlative data are described in the NSSDC Handbook of Correlative Data, NSSDC 71-05, which is available from the Data Center.

### Participation

The National Space Science Data Center invites members of the scientific community to contribute data from satellite experiments. NSSDC assigns a specialist in the appropriate scientific discipline for each experiment to arrange for data acquisition with the principal investigator and to help solve related problems. Acquired data are cataloged

and made available to users according to established procedures. Scientists who have not been contacted by one of the subject specialists and who have analyzed or reduced data available for contribution are requested to contact NSSDC so that transferral of the data may be arranged.

As a part of its information system, NSSDC collects publications that relate to the satellite data in its holdings. These documents are cataloged and keyworded for computer sort purposes in a Technical Reference File. NSSDC seeks, in particular, copies of published papers resulting from a user's study of data provided by NSSDC. Information from the Technical Reference File may also be furnished to the user on a special request basis; however, NSSDC is not a document distribution center.

The Data Center is continually striving to increase the usefulness of the Data Catalog by improving the data descriptions and including all pertinent information. Scientists are invited to submit their comments or recommendations to NSSDC regarding the data available, the services provided, and the contents and format of the Catalog. The Data Center is attempting to distribute the Catalog to all interested scientific personnel. Recipients are urged to inform potential data users of its availability. Anyone wishing to receive a copy of this publication can have his name added to this distribution list by phone or letter request.

### Abbreviations

The abbreviations used in the Catalog are listed below. All abbreviations are given in upper case letters to correspond to the computer produced entries in Section 1, Data Description, and the acronyms in Section 2, Supporting Data. Note that the same abbreviation is used for both the singular and plural forms.

A	angstrom
ABMA	Army Ballistic Missile Agency
ACIC	Aeronautical Chart and Information Center
AE	Aeronomy Explorer
AFB	Air Force Base
AFCRL	Air Force Cambridge Research Laboratories
AIMP	Anchored Interplanetary Monitoring Platform
ALOSYN	Alouette topside sounder synoptic (data)
ALSEP	Apollo Lunar Surface Experiments Package
ALT	altitude
AM	amplitude modulation
AMP	amphere

AMS	Army Map Service
AMU	atomic mass unit
AP	magnetic activity index $A_p$
APL	Applied Physics Laboratory
APT	automatic picture transmission
ARC	Ames Research Center
ARC-MIN	arc-minute
ARC-SEC	arc-second
ARIZ.	Arizona
ARPA	Advanced Research Projects Agency
ASOS	antimony-sulfide oxy-sulfide
ATM	atmosphere
ATS	Applications Technology Satellite
AU	astronomical unit
AVCS	advanced vidicon camera system
AVG	average
BCD	binary coded decimal
BE	Beacon Explorer
BERK	Berkeley
BESYS	Bell System
BEV	billion electron volts
BIT	binary integer
BPI	bits per inch
BPS	bits per second
BTL	Bell Telephone Laboratories
BV	billion volts
B/W	black and white
CALIF.	California
CAL TECH	California Institute of Technology
CAN	Canada
CAV	composite analog video
CDC	Control Data Corporation
CDS	cadmium sulfide
CIN	color interior (film)
CM	centimeter; Command Module
CNES	Centre National d'Etudes Spatiales
CNET	Centre National d'Etudes des Telecommunications
CNTR	center
CO	company
COLO.	Colorado
COMM	Communications (Research Centre)
CORP	corporation
COS	cosine
COSPAR	Committee on Space Research
CPU	central processing unit

CRC	Communications Research Centre
CRPL	Central Radio Propagation Laboratories (later ITSA; later ESSA; now NOAA)
CRT	cathode ray tube
CSI	cesium iodide
CSM	Command Service Module
DB	decibel
D.C.	District of Columbia
DC	direct current
DCS	direct couple system
DEG	degree
D&R	Deblock and Register (program)
DRTE	Defence Research Telecommunications Establishment (now CRC)
DSIR	Department of Science and Industrial Research (now Science Research Council)
DV	digital video
E	energy; east
EASEP	Early Apollo Scientific Experiment Package
E.G.	for example
EGO	Eccentric (Orbiting) Geophysical Observatory
EL	electric
EME	environmental measurement experiment
EOGO	Eccentric Orbiting Geophysical Observatory
EPE	Energetic Particle Explorer
E/Q	energy per unit charge
ERS	Environmental Research Satellite
ESOC	European Space Operations Centre
ESRO	European Space Research Organization
ESSA	Environmental Science Services Administration (now NOAA)
ET AL.	and others
ETC.	and so forth
ETE	every twenty-eighth (digital picture)
EUV	extreme ultraviolet
EV	electron volt
EVA	extravehicular activity
FM	frequency modulation
FMRT	final meteorological radiation tape(s)
FOUND	foundation
FSK	frequency shift key
FT	foot
GE	General Electric (Company)
.GE.	greater than or equal to
G.E.T.	ground elapsed time



GM	Geiger-Mueller; gram
GMT	Greenwich mean time
GRE	ground reconstruction equipment
GSFC	Goddard Space Flight Center
.GT.	greater than
GV	gigavolt
HE	helium
HQ	headquarters
HR	hour; high resolution
HRIR	high-resolution infrared radiometer
HZ	hertz
IBM	International Business Machines
ID	identification
IDCS	image dissector camera system
I.E.	that is
IE	Ionospheric Explorer
IGRF	International Geomagnetic Reference Field
ILL.	Illinois
IMP	Interplanetary Monitoring Platform
IN.	inch
INC	incorporated
IQSY	International Years of the Quiet Sun
IR	infrared
IRIG	Inter-Range Instrumentation Group
IRIS	infrared interferometer spectrometer
ISIS	International Satellite for Ionospheric Studies
ITSA	Institute for Telecommunication Sciences and Aeronomy (later ESSA; now NOAA)
JPL	Jet Propulsion Laboratory
K	Kelvin
KBS	kilobits per second
KEV	kiloelectron volt
KG	kilogram
KHZ	kilohertz
KM	kilometer
KP	magnetic activity index $K_p$
LA	Los Angeles
LAB	laboratory
LARC	Langley Research Center
LAT.	latitude
.LE.	less than or equal to
LEPEDEA	low-energy proton and electron differential energy analyzer

LM	lunar module
LONG.	longitude
.LT.	less than
M	meter
MASS.	Massachusetts
MD.	Maryland
MEV	million electron volts
MG	milligram
MHZ	megahertz
MICH.	Michigan
MIN	minute
MINN.	Minnesota
MIT	Massachusetts Institute of Technology
MM	millimeter
MR	medium resolution
MSC	Manned Spacecraft Center
MSEC	millisecond
MSFC	Marshall Space Flight Center
MUSE	monitor of ultraviolet solar energy
MW	milliwatt
N	north
NASA	National Aeronautics and Space Administration
NESC	National Environmental Satellite Center (now NESS)
NESS	National Environmental Satellite Service
N.H.	New Hampshire
N.J.	New Jersey
N.M.	nautical mile
NMRT	Nimbus meteorological radiation tape
NO.	number
NORAD	North American Air Defense Command
NRC	National Research Council
NRL	Naval Research Laboratory
NSSDC	National Space Science Data Center
OBS	observatory
ODG	Orbit Data Generation (program)
ODP	Orbit Determination Program
OGO	Orbiting Geophysical Observatory
OMSF	Office of Manned Space Flight
ONR	Office of Naval Research
OPEP	orbital-plane experiment package
ORS	Orbiting Research Satellite
OSO	Orbiting Solar Observatory
OSSA	Office of Space Science and Applications
OV	Orbiting Vehicle

PA.	Pennsylvania
PAM	pulse amplitude modulation
PCM	pulse coded modulation
PFM	pulse frequency modulation
PIXEL	picture element
PL	planned launch
PM	pulse modulation; photomultiplier
P-N	positive-negative (junction)
POGO	Polar Orbiting Geophysical Observatory
PPS	pulse per second
PTL	Photographic Technology Laboratory
RAD	radius
RA E	Radio Astronomy Explorer
RES	research
RF	radio frequency
RMS	root mean square
RPM	revolutions per minute
RRL	Radio Research Laboratories
RSCH	research
RSRS	Radio and Space Research Station
SAO	Smithsonian Astrophysical Observatory
SD	San Diego
SE	Solar Explorer
SEC	second
SIRS	satellite infrared spectrometer
SOEP	solar-oriented experiment package
SOLRAD	Solar Radiation (satellite)
SQ	square
SR	Solar Radiation (satellite)
SRI	Stanford Research Institute
SSD	Space Sciences Division (Jet Propulsion Laboratory)
STADAN	Space Tracking and Data Acquisition Network
STER	steradian
STL	Space Technology Laboratories (TRW Systems Group)
SUI	State University of Iowa (now University of Iowa)
SWRF	Sine Wave Response Filter (program)
TDP	Tracking Data Processor (program)
THIR	temperature-humidity infrared radiometer
TIROS	Television Infrared Observation Satellite
TOPSI	topside (sounder)
TRS	Tetrahedral Research Satellite
TRW	TRW Systems Group
TV	television

U	university
UCLA	University of California at Los Angeles
UCSD	University of California at San Diego
UK, U.K.	United Kingdom
US, U.S.	United States
USAF	United States Air Force
USC	University of Southern California
USSR,	
U.S.S.R.	Union of Soviet Socialist Republics
UT	universal time
UV	ultraviolet
V	volt
VA.	Virginia
VHF	very high frequency
VLF	very low frequency
VS	versus
W	watt; west
WDC	World Data Center
WIS.	Wisconsin
WPM	words per minute
YR	year
Z	atomic number

## SECTION 1 - DATA DESCRIPTION

This section of the Catalog was produced from the computerized NSSDC information system, which provides the Data Center with an efficient means for maintaining up-to-date descriptions of available data and for announcing the acquisition of new data. For each data set\* description contained in the information system, descriptions of the experiment and spacecraft from which the data originated are also included as background information.

In the NSSDC information system, each spacecraft, experiment, and data set is assigned an identification number, the NSSDC ID No., that is based on the launch sequence of the spacecraft. Subsequent to 1962, the NSSDC ID No. for a spacecraft (e.g., 65-042A for Explorer 28) corresponds to the COSPAR (Committee on Space Research) international designation. The Data Center has provided corresponding numbers for satellites that were launched during the years 1957 to 1962. (For example, Explorer 1, which carries COSPAR designation 1958 Alpha 1, was the first spacecraft launched in 1958 and, therefore, has been assigned an NSSDC ID No. of 58-001A.) The experiment and data set ID numbers are based on the spacecraft number. For example, the experiments carried aboard spacecraft 67-031A (ATS 2) are numbered 67-031A-01, 67-031A-02, etc. Data sets derived from experiment 67-031A-01 are designated 67-031A-01A, 67-031A-01B, etc. All descriptions contained in this section are ordered chronologically by the NSSDC ID No., which appears in the upper right-hand corner of the description.

The heading for each spacecraft description in this section includes the orbital parameters (for a given epoch date) for the spacecraft as well as an indication of its operational status. The heading for an experiment entry indicates each investigator associated with the experiment and his address; the original experiment institution is also identified. Each heading for a data set entry includes an indicator that describes the availability of the data. The indicator "Data at NSSDC Ready for Distribution" designates a data set for which cataloging, verification, and documentation are complete enough to provide a comprehensible set of data to satisfy routine requests. "Data in Published Report(s)" indicates either (1) that all or a significant portion of the

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\*A data set is defined as (1) a body of data that is the result of the reduction or analysis of data from a given experiment and/or (2) supporting information (catalogs, ephemeris, etc.) that is uniquely related to a given experiment or spacecraft. The content, characteristics, form, format, or organization of this body of data is different from that of any other body of data and/or supporting information associated with the given experiment or spacecraft.

data are contained in a published report or journal or (2) that the only accessible source of any reduced data from an experiment is the published document. The publications cited in the brief descriptions are normally available through scientific libraries or document distribution centers. NSSDC provides copies of publications only if they cannot be obtained through libraries or distribution centers. If the data set indicator is "Data at Another Center," the name and address of that data center and the data set name and catalog number used by that center are given in the brief description. Another indicator that appears is "Data at NSSDC Being Processed." Documentation and verification of the data in a data set with this indicator are currently in process, and the data may be complete enough to satisfy limited requests.

For information on the procedures for ordering the data described here, please refer to page vii in the Introduction of this Catalog.

NATIONAL SPACE SCIENCE DATA CENTER  
SATELLITE EXPERIMENT DATA CATALOG ENTRIES  
(DATED 10/21/71)

SPACECRAFT NAME- EXPLORER 1

NSSDC ID 58-001A

OTHER NAMES- 1558 ALPHA 1, 58-001A

LAUNCH DATE- 02/01/58

DATE LAST SCIENTIFIC DATA RECORDED- 03/16/58

AGENCY- US ARMY

SPACECRAFT WEIGHT IN ORBIT-

14 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 02/01/58

ORBIT PERIOD- 114.8 MIN.

APOGEE- 2550. KM ALT

PERIGEE- 358. KM ALT

INCLINATION-

33 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 1, THE FIRST U.S. ARTIFICIAL EARTH SATELLITE, WAS INSTRUMENTED FOR THE STUDY OF COSMIC RAYS, MICROMETEORITES, AND SATELLITE TEMPERATURES. DATA WERE CONTINUOUSLY TRANSMITTED USING A 60-MW AMPLITUDE-MODULATED TRANSMITTER AND A 10-MW PHASE-MODULATED TRANSMITTER. DATA WERE RECORDED ONLY WHEN THE CYLINDRICAL SPIN-STABILIZED SPACECRAFT WAS OVER ONE OF 17 RECEIVING STATIONS. BOTH THE HIGH-POWER AND LOW-POWER TRANSMITTERS WERE BATTERY POWERED AND OPERATED PROPERLY UNTIL FEBRUARY 12, 1958, AND MARCH 16, 1958, RESPECTIVELY.

EXPERIMENT NAME- COSMIC-RAY DETECTOR

NSSDC ID 58-001A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA, IOWA CITY, IOWA  
G.H. LUDWIG, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 03/16/58

EXPERIMENT BRIEF DESCRIPTION

AN ANTON 314 OMNIDIRECTIONAL GEIGER TUBE DETECTOR WAS USED TO MEASURE THE FLUX OF ENERGETIC CHARGED PARTICLES (PROTONS E.GT. 30 MEV AND ELECTRONS E.GT. 3 MEV). THE DETECTOR WAS SATURATED MUCH OF THE TIME. THE EXPERIMENT PERFORMED NORMALLY UNTIL MARCH 16, 1958, AT WHICH TIME THE BATTERIES POWERING THE GEIGER TUBE CIRCUITS BECAME EXHAUSTED. NO USABLE DATA WERE RECEIVED AFTER THAT TIME.

DATA SET NAME- TABULATION OF ANTON 314 GM COUNTS

NSSDC ID 58-001A-01A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 02/01/58 TO 03/15/58

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED DATA TABULATED ON APPROXIMATELY 900 SHEETS OF PAPER COVERING THE PERIOD FEBRUARY 1, 1958, TO MARCH 15, 1958. THE TABULATION CONSISTS OF TIME OF OBSERVATION, GEOGRAPHIC POSITION OF THE SATELLITE, RECEIVING STATION NAME, COUNTING RATE (UNCORRECTED FOR DEAD TIME), AND NUMBER OF COUNTS (SCALED BY 32) THAT OCCURRED DURING THE ACCUMULATION TIME. ALL RECORDINGS OF THE SATELLITE SIGNALS OBTAINED BY THE RECEIVING STATION NETWORK ARE LISTED IN A MASTER RECORDING LOG WHICH IS ALSO PROVIDED. THE DATA ARE CONTAINED IN 'RADIATION OBSERVATIONS WITH SATELLITE 1958 ALPHA (EXPLORER 1),' BY G.H. LUDWIG, VOL. 1-5, SUI 61-3, MARCH 1961.

DATA SET NAME- TABULATION OF ANTON 314 GM COUNTS ON  
MICROFILM

NSSDC ID 58-001A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 02/01/58 TO 03/15/58

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE REDUCED DATA TABULATED IN DATA SET 58-001A-01A ON ONE REEL OF 16-MM MICROFILM.

EXPERIMENT NAME- MICROMETEORITE DETECTOR

NSSDC ID 58-001A-02

ORIGINAL EXPERIMENT INSTITUTION- AFCRL

INVESTIGATORS- E. MANRING, AFCRL , L.G. HANSCOM FIELD, BEDFORD, MASS.  
M. DUBIN, NASA-HEADQUARTERS , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 04/01/58

EXPERIMENT BRIEF DESCRIPTION

DIRECT MEASUREMENTS OF MICROMETEORITES WERE MADE ON EXPLORER 1 USING TWO SEPARATE DETECTORS -- A WIRE GRID DETECTOR AND A CRYSTAL TRANSDUCER. THE PARAMETERS DETERMINED WERE THE INFLUX RATES OF EACH SIZE INTERVAL, THE IMPINGING VELOCITY, THE COMPOSITION, AND THE DENSITY OF THE MICROMETEORITE. THE WIRE GRID DETECTOR CONSISTED OF 12 CARDS (CONNECTED IN PARALLEL)



MOUNTED IN A FIBERGLASS SUPPORTING RING WHICH IN TURN WAS MOUNTED ON THE SATELLITE'S SPHERICAL SURFACE. EACH CARD WAS WOUND WITH ENAMELED 17-MICRON-DIAMETER NICKEL ALLOY WIRE. TWO LAYERS OF WIRE WERE WOUND ON EACH CARD TO ENSURE THAT A TOTAL AREA OF 1 CM BY 1 CM WAS COMPLETELY COVERED. A MICROMETEORITE OF ABOUT 10 MICRONS WOULD FRACTURE THE WIRE UPON IMPACT, DESTROY THE ELECTRICAL CONNECTION, AND THUS RECORD THE EVENT. THE ACOUSTIC DETECTOR (TRANSDUCER AND SOLID-STATE AMPLIFIER) WAS PLACED IN ACOUSTICAL CONTACT WITH THE MIDDLE SECTION SKIN WHERE IT COULD RESPOND TO METEORITE IMPACTS ON THE SPACECRAFT SKIN SUCH THAT EACH RECORDED EVENT WOULD BE A FUNCTION OF MASS AND VELOCITY. THE EFFECTIVE AREA OF THIS SECTION WAS 0.075 SQ M, AND THE AVERAGE THRESHOLD SENSITIVITY WAS 2.5 TIMES 10 TO THE MINUS 3 POWER GM-CM/SEC. DURING LAUNCH ON FEBRUARY 1, 1958, ONE OR TWO OF THE 12 GRID DETECTORS WERE APPARENTLY BROKEN. THE RECORDED GRID DATA, VALID FOR APPROXIMATELY 60 DAYS AFTER LAUNCH (FEBRUARY 1, 1958, TO APRIL 1, 1958), SHOWED NO MORE THAN ONE AND POSSIBLY NO DETECTORS BROKEN FROM METEORITE IMPACTS. DATA FROM THE ACOUSTICAL SENSOR WERE OBTAINED WHEN AN IMPACT OCCURRED WHILE THE SATELLITE WAS OVER A GROUND RECORDING STATION. OVER AN 11-DAY PERIOD (FEBRUARY 1, 1958, TO FEBRUARY 12, 1958), 145 IMPACTS WERE RECORDED (MINUS EIGHT IMPACTS THAT REGISTERED DURING THE LAUNCH AND INJECTION INTO ORBIT). DUE TO POOR SIGNAL TO NOISE RATIOS, VERY ELABORATE DATA REDUCTION PROCEDURES HAD TO BE DEVELOPED. THE HIGH IMPACT RATES ON ONE PORTION OF THE ORBIT AND THE SUBSEQUENT FAILURES IN THE SATELLITE'S ELECTRONIC SYSTEM HAVE BEEN ATTRIBUTED TO A METEOR SHOWER.

DATA SET NAME- TRANSDUCER DATA

NSSDC ID 58-001A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 02/01/58 TO 02/12/58

DATA SET BRIEF DESCRIPTION

THE DATA SET IS IN HARD-COPY FORM AND IS CONTAINED IN THE PUBLISHED REPORT, 'IGY MICROMETEORITE MEASUREMENTS,' BY M. DUBIN, APPEARING IN SPACE RESEARCH I, ED. KALLMANN-BIJL, 1042-1058, NORTH HOLLAND PUBLISHING COMPANY, AMSTERDAM, 1960. THE REPORT GIVES A DESCRIPTION OF THE EXPERIMENT, INSTRUMENTATION, OPERATIONAL EXPERIENCE, DATA ANALYSIS, AND RESULTS. ALSO CONTAINED IN THE ARTICLE ARE THREE FIGURES PERTAINING TO THE TRANSDUCER SENSOR OR ITS DATA OUTPUT. THEY SHOW (1) THE TRANSDUCER OUTPUT AS A FUNCTION OF MOMENTUM, (2) THE DIURNAL VARIATION OF MICROMETEORITE IMPACTS, AND (3) THE IMPACT RATE BY DAY. THE IMPACT DATA (THREE PAGES), ARRANGED CHRONOLOGICALLY FOR EACH RECEIVING STATION, LISTS UNIVERSAL TIME OF PASSES WITH IMPACT, THE NUMBER OF PASSES, TOTAL TELEMETRY TIME BY THE RECEIVING STATION, THE TOTAL AND CORRECTED NUMBER OF IMPULSES, AND THE TOTAL TIME. THE DATA COVER AN 11-DAY PERIOD (FEBRUARY 1, 1958, TO FEBRUARY 12, 1958) AND INCLUDE A TOTAL OF 145 HITS (CORRECTED FOR IMPACTS ON LIFTOFF AND INJECTION INTO ORBIT). THE RESULTS ARE COMPARED WITH THOSE FROM PIONEER 1, AND THE SPACE DENSITY OF COSMIC DUST IN THE VICINITY OF THE EARTH IS COMPUTED.

DATA SET NAME- WIRE GRID DATA

NSSDC ID 58-001A-02B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 02/01/58 TO 04/01/58

DATA SET BRIEF DESCRIPTION

THE DATA SET IS IN PUBLISHED FORM IN A REPORT BY E. R. MANRING, 'MICROMETEORITE MEASUREMENTS FROM 1958 ALPHA AND GAMMA SATELLITES,' PLANETARY AND SPACE SCIENCE, 1, 27-31, PERGAMON PRESS, 1959. THE REPORT GIVES A DESCRIPTION OF THE EXPERIMENT, INSTRUMENTATION, OPERATIONAL EXPERIENCE, DATA ANALYSIS, AND RESULTS. ALSO CONTAINED IN THE PUBLICATION ARE FIVE FIGURES DEPICTING (1) THE CIRCUIT DIAGRAM OF THE SUBCARRIER GENERATOR AND GRID DETECTORS FEEDING INTO THE LOWER POWER TRANSMITTER, (2) THE GRID DETECTOR MOUNTING RING, (3) THE SUBCARRIER GENERATOR FREQUENCY AS A FUNCTION OF BROKEN GRID DETECTORS, (4) A PICTURE OF IMPACT CRATERS ON A SINGLE LAYER OF 17-MICRON WIRES, AND (5) THE POSITION AND THRESHOLD SENSITIVITIES OF THE ACOUSTIC DETECTOR. THE RECORDED GRID DATA SPAN THE PERIOD FEBRUARY 1, 1958, TO APRIL 1, 1958, APPROXIMATELY 60 DAYS. DURING THIS PERIOD, NOT MORE THAN ONE GRID WAS FRACTURED. THE AVERAGE VALUE OF SUCH A SET OF DATA BEING VIRTUALLY MEANINGLESS, A THEORETICAL INFLUX RATE THAT WOULD PRODUCE AT LEAST ONE DETECTOR HIT IN THE TIME INTERVAL OBSERVED WAS COMPUTED, ASSUMING A GIVEN PROBABILITY AS BEING VALID. THE COMPUTED THRESHOLD SIZE FOR METEORITES AT HYPERVELOCITIES, AS WELL AS THE EFFECTS OF EARTH SHIELDING OF THE SATELLITE ON THE CALCULATED MAXIMUM INFLUX RATES, ARE ALSO DISCUSSED.

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SPACECRAFT NAME- EXPLORER 4

NSSDC ID 58-005A

OTHER NAMES- 1958 EPSILON 1, 58-005A

LAUNCH DATE- 07/25/58

DATE LAST SCIENTIFIC DATA RECORDED- 10/05/58

AGENCY- ABMA-JPL

SPACECRAFT WEIGHT IN ORBIT-

8 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 07/26/58

ORBIT PERIOD- 110.2 MIN.

APOGEE- 2213. KM ALT

PERIGEE- 263. KM ALT

INCLINATION- 50.3 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 4 WAS A CYLINDRICALLY SHAPED SATELLITE INSTRUMENTED TO MAKE THE FIRST DETAILED MEASUREMENTS OF CHARGED PARTICLES (PROTONS AND ELECTRONS) TRAPPED IN THE TERRESTRIAL RADIATION BELTS. AN UNEXPECTED TUMBLE MOTION OF THE SATELLITE MADE THE INTERPRETATION OF THE DETECTOR DATA VERY DIFFICULT. THE LOW-POWER TRANSMITTER AND THE PLASTIC SCINTILLATOR DETECTOR FAILED SEPTEMBER 3, 1958. THE TWO GM TUBES AND THE CSI CRYSTAL DETECTORS CONTINUED TO OPERATE NORMALLY UNTIL SEPTEMBER 19, 1958. THE HIGH-POWER TRANSMITTER CEASED SENDING SIGNALS ON OCTOBER 5, 1958. IT IS BELIEVED THAT EXHAUSTION

OF THE POWER BATTERIES CAUSED THESE FAILURES. THE SPACECRAFT DECAYED FROM ORBIT AFTER 454 DAYS ON OCTOBER 23, 1959.

EXPERIMENT NAME- CHARGED PARTICLE DETECTOR

NSSDC ID 58-005A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA  
L.A. FRANK, U OF IOWA , IOWA CITY, IOWA  
C.E. MCILWAIN, U OF CALIFORNIA, SD , LA JCLLA, CALIF.  
G.H. LUDWIG, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 09/21/58

#### EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO EXTEND THE FIRST MEASUREMENTS OF THE TRAPPED RADIATION BELT DISCOVERED WITH EXPLORERS 1 AND 3 AND TO PROVIDE MEASUREMENTS OF ARTIFICIALLY INJECTED ELECTRONS FROM THE THREE HIGH-ALTITUDE ARGUS NUCLEAR DETONATIONS. FOUR SEPARATE RADIATION DETECTORS WERE USED IN THE EXPERIMENT -- A SHIELDED DIRECTIONAL PLASTIC SCINTILLATION COUNTER SENSITIVE TO ELECTRONS (E.GT. 700 KEV) AND PROTONS (E.GT. 10 MEV), A SHIELDED DIRECTIONAL CESIUM IODIDE SCINTILLATION COUNTER SENSITIVE TO ELECTRONS (E.GT. 20 KEV) AND PROTONS (E.GT. 400 KEV), AN OMNIDIRECTIONAL ANTON TYPE 302 GM COUNTER SENSITIVE TO ELECTRONS (E.GT. 3 MEV) AND PROTONS (E.GT. 30 MEV), AND A SHIELDED OMNIDIRECTIONAL ANTON TYPE 302 GM TUBE SENSITIVE TO ELECTRONS (E.GT. 5 MEV) AND PROTONS (E.GT. 40 MEV). THE PLASTIC SCINTILLATION COUNTER AND THE CESIUM IODIDE SCINTILLATION COUNTER WERE EACH VIEWED BY A SEPARATE PHOTOMULTIPLIER TUBE. THESE DETECTORS WERE MOUNTED ORTHOGONALLY TO THE LONGITUDINAL AXIS OF THE SATELLITE WITH APERTURES FACING IN OPPOSITE DIRECTIONS. THE TWO GM COUNTERS WERE LOCATED SIDE BY SIDE ALONG THE SATELLITE LONGITUDINAL AXIS. THE PLASTIC SCINTILLATION COUNTER FAILED ABOUT SEPTEMBER 3, 1958, WHILE THE TWO GM COUNTERS AND THE CESIUM IODIDE DETECTORS CONTINUED TO OPERATE NORMALLY UNTIL SEPTEMBER 15, 1958. THE FAILURES WERE PROBABLY DUE TO EXHAUSTION OF THE POWER BATTERIES.

DATA SET NAME- COUNT RATE DATA (STATION ORDERED) ON  
MAGNETIC TAPE

NSSDC ID 58-005A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/26/58 TO 09/21/58

#### DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED DATA ON TWO 7-TRACK, CDC, BCD MAGNETIC TAPES WRITTEN AT 556 BPI WITH 120 CHARACTERS (15 CDC WORDS) PER LOGICAL AND

PHYSICAL RECORD. THE DATA CONSIST OF DETECTOR COUNTING RATES ALONG WITH TIME (MONTH, DAY, HR), MODEL MAGNETIC FIELD MAGNITUDE (B IN GAUSS), MCILWAIN'S L PARAMETER (EARTH RADIUS), B/BO, LATITUDE, LONGITUDE, AND ALTITUDE (KM). THE DATA ARE ORDERED BY SATELLITE TRACKING STATION.

DATA SET NAME- COUNT RATE DATA (TIME ORDERED) ON  
MAGNETIC TAPE

NSSDC ID 58-005A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/26/58 TO 09/21/58

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED DATA IN ONE FILE ON ONE 7-TRACK, IBM 7094, BCD MAGNETIC TAPE WRITTEN AT 556 BPI WITH 120 CHARACTERS (20 WORDS) PER LOGICAL AND PHYSICAL RECORD. THE TAPE CONTAINS 23,866 RECORDS. THE DATA CONSIST OF DETECTOR COUNTING RATES ALONG WITH TIME (MONTH, DAY, HR), SCALAR MAGNETIC FIELD (B IN GAUSS), MCILWAIN'S L PARAMETER (EARTH RADIUS), B/BO, LATITUDE, LONGITUDE, AND ALTITUDE (KM). THE DATA ARE TIME ORDERED. THIS DATA SET WAS PRODUCED AT NSSDC AND CONTAINS THE SAME DATA, IN TIME ORDER, AS FOUND IN DATA SET 58-005A-01A.

DATA SET NAME- COUNT RATE DATA (TIME ORDERED) WITH  
RECALCULATED B,L COORDINATES ON TAPE

NSSDC ID 58-005A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/26/58 TO 09/21/58

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED DATA IN ONE FILE ON ONE 7-TRACK, IBM 7094, BCD MAGNETIC TAPE WRITTEN AT 556 BPI. THE TAPE HAS 120 CHARACTERS (20 WORDS) PER LOGICAL AND PHYSICAL RECORD AND 23,866 RECORDS. THE DATA CONSIST OF DETECTOR COUNTING RATES ALONG WITH TIME (MONTH, DAY, HR), MODEL MAGNETIC FIELD (B IN GAUSS), AND MCILWAIN'S L PARAMETER (THE 48-TERM JENSEN-CAIN MODEL USED IN DATA SET 58-005A-01A AND A 120-TERM GSFC 1966 MODEL), B/BO, LATITUDE, LONGITUDE, AND ALTITUDE. THE DATA WERE ORDERED ON TIME AT NSSDC. THESE DATA ARE THE SAME AS THOSE APPEARING IN DATA SET 58-005A-01A EXCEPT THAT THE 120-TERM MODEL MAGNETIC FIELD AND MCILWAIN'S L PARAMETER WERE ADDED TO THE FORMAT AT NSSDC. FOR FURTHER INFORMATION CONCERNING THIS DATA SET, SEE THE PAPER BY J. P. LAVINE AND J. I. VETTE IN J. GEOPHYS. RES., 75, PAGE 1940, 1970.

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SPACECRAFT NAME- PIONEER 1  
OTHER NAMES- 1958 ETA 1, ABLE 1, 58-007A

NSSDC ID 58-007A

LAUNCH DATE- 10/11/58

DATE LAST SCIENTIFIC DATA RECORDED- 10/13/58

AGENCY- USAF-NASA

SPACECRAFT WEIGHT IN ORBIT-

34 KG

ORBIT TYPE-

EPOCH- 10/11/58

ORBIT PERIOD- 2598 MIN.

APOGEE-115000 KM ALT

PERIGEE- 6378 KM ALT

INCLINATION-

DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

PIONEER 1, THE SECOND AND MOST SUCCESSFUL OF THREE PROJECT ABLE SPACE PROBES, WAS INTENDED TO STUDY THE IONIZING RADIATION, COSMIC RAYS, MAGNETIC FIELDS, AND MICROMETEORITES IN THE VICINITY OF THE EARTH AND IN LUNAR ORBIT. IT CARRIED A TV SCANNER TO PHOTOGRAPH THE MOON'S SURFACE. IT WAS A BATTERY-POWERED SPACECRAFT WITH A MAGNETIC DIPOLE FOR TV TRANSMISSION AND AN ELECTRIC DIPOLE FOR OTHER TELEMETRY TRANSMISSION AND DOPPLER INFORMATION. DATA FROM EACH OF THE EXPERIMENTS WERE FED TO THE INPUT OF INDIVIDUAL SUBCARRIER OSCILLATORS, THE OUTPUTS OF WHICH SIMULTANEOUSLY MODULATED THE TRANSMITTER. DUE TO A LAUNCH VEHICLE MALFUNCTION, THE CYLINDRICAL SPACECRAFT ATTAINED ONLY A BALLISTIC TRAJECTORY WITH A LOCAL TIME OF APOGEE AROUND 1300 HR. THE SPACECRAFT WAS SPIN STABILIZED AT 1.8 RPS, AND THE SPIN AXIS DIRECTION WAS APPROXIMATELY PERPENDICULAR TO THE GEOMAGNETIC MERIDIAN PLANES OF THE TRAJECTORY. THE REAL-TIME TRANSMISSION WAS OBTAINED FOR ABOUT 75 PERCENT OF THE FLIGHT, BUT THE PERCENTAGE OF DATA RECORDED FOR EACH EXPERIMENT WAS VARIABLE. EXCEPT FOR THE FIRST HOUR OF FLIGHT, THE SIGNAL TO NOISE RATIO WAS GOOD. THE SPACECRAFT REENTERED THE EARTH'S ATMOSPHERE ON OCTOBER 13, 1958, AT 0400 UT, AFTER RETURNING A SMALL QUANTITY OF USEFUL SCIENTIFIC INFORMATION.

EXPERIMENT NAME- ION CHAMBER

NSSDC ID 58-007A-01

ORIGINAL EXPERIMENT INSTITUTION- SPACE TECHNOLOGY LAB

INVESTIGATORS- C.P. SONETT, NASA-ARC , MOFFETT FIELD, CALIF.

P.J. COLEMAN, JR., U OF CALIFORNIA, LA , LOS ANGELES, CALIF.

A. ROSEN, TRW SYSTEMS GROUP , REDONDO BEACH, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/13/58

#### EXPERIMENT BRIEF DESCRIPTION

THE ION CHAMBER EXPERIMENT WAS DESIGNED TO STUDY THE HIGH FLUX RADIATION SURROUNDING THE EARTH. THE INSTRUMENT WAS AN ALUMINUM-WALLED, CYLINDRICALLY SHAPED VESSEL WITH A VOLUME OF 43 CUBIC CM FILLED WITH SPECTROSCOPICALLY PURE ARGON. IT WAS MOUNTED JUST INSIDE THE CYLINDRICAL WALL OF THE SATELLITE. THE MINIMUM AREAL DENSITY THAT A PARTICLE TRAVERSED BEFORE REACHING THE SENSITIVE VOLUME OF THE CHAMBER WAS .450 GM/SQ CM, THE MAXIMUM WAS 20 GM/SQ CM. THE CURRENT FROM THE ION CHAMBER WAS MEASURED BY A DC ELECTROMETER AMPLIFIER WITH A RANGE OF 0.5 ROENTGENS/HR TO 10 RAISED TO THE 7 POWER ROENTGENS/HR. THE DUTY CYCLE OF THE INSTRUMENT CONSISTED OF 180 SEC OF IONIZATION CHAMBER OUTPUT FOLLOWED BY 20 SEC OF CALIBRATION VOLTAGE. THE CHAMBER WAS CAPABLE OF RESPONDING TO PRIMARY COSMIC RAYS AND ALSO TO THE

SECONDARY MESONS, PROTONS, BETA PARTICLES, AND GAMMA RAYS THAT MAY RESULT FROM THE INTERACTION OF THE PRIMARY PARTICLES WITH THE WALLS OF THE CHAMBER AND THE MATERIAL SURROUNDING THE ION CHAMBER. THE SECONDARIES COULD INCREASE THE IONIZATION A FACTOR OF 50. ELECTRONS MUST HAVE AN ENERGY GREATER THAN 1 MEV, PROTONS GREATER THAN 5 MEV, AND ALPHAS GREATER THAN 200 MEV IN ORDER TO PENETRATE THE WALLS OF THE CHAMBER. IT WAS DISCOVERED THAT THE ION CHAMBER HAD LEAKED AND THAT THE PRESSURE DURING FLIGHT WAS 1.58 ATM. CONSIDERATION OF ALL OTHER ERRORS RESULTED IN A STANDARD DEVIATION AS GREAT AS 50 PERCENT FOR SOME DATA POINTS. MOST OF THE DATA WERE TRANSMITTED FROM 1000 TO 1800 UT ON OCTOBER 11, 1958, AND FROM 0800 TO 2100 UT ON OCTOBER 12, 1958.

DATA SET NAME- SANBORN OSCILLOGRAMS ON MICROFILM

NSSDC ID 58-007A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/11/58 TO 10/13/58

DATA SET BRIEF DESCRIPTION

THESE RAW DATA CONSIST OF THE SANBORN OSCILLOGRAMS RECORDED FOR THE ENTIRE FLIGHT OF PIONEER 1. THEY WERE MADE FROM THE ANALOG MAGNETIC TAPES THAT WERE RECORDED AT THE MANCHESTER, HAWAII, AND SINGAPORE GROUND STATIONS. THE OSCILLOGRAMS ARE PLOTS OF FREQUENCY VS TIME FOR EACH TELEMETRY CHANNEL AND ARE AVAILABLE ON TWO REELS OF 35-MM MICROFILM ORDERED BY STATION AND TIME. ALSO AVAILABLE ARE THE CALIBRATION CURVES THAT PERMIT RECOVERY OF THE RADIATION LEVELS OBSERVED FROM THE OSCILLOGRAMS. THE ION CHAMBER CHANNEL (NUMBER 1) HAD 95 PERCENT COVERAGE FROM 1000 TO 1800 UT ON OCTOBER 11, 1958, 5 PERCENT COVERAGE FOR 1800 UT ON OCTOBER 11, 1958, TO 0800 UT ON OCTOBER 12, 1958, 95 PERCENT COVERAGE FROM 0800 TO 2200 UT ON OCTOBER 12, 1958, AND 5 PERCENT COVERAGE FROM 2200 UT ON OCTOBER 12, 1958, TO 0400 UT ON OCTOBER 13, 1958.

DATA SET NAME- PLOTS OF IONIZING RADIATION VS ALTITUDE

NSSDC ID 58-007A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/11/58 TO 10/11/58

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA CONSIST OF ONE PLOT OF IONIZING RADIATION (ROENTGENS/HR) VS DISTANCE FROM THE SURFACE OF THE EARTH (KM) FOR THE FIRST 4 HR OF FLIGHT (DURING TRAVERSAL OF THE RADIATION BELTS). ERROR BARS ARE INCLUDED. THIS PLOT WAS PUBLISHED IN THE J. GEOPHYS. RES., 64, 709-712, 1959. THESE RADIATION LEVELS WERE BASED ON THE ASSUMPTION THAT THE SENSITIVITY OF THE CHAMBER HAD BEEN REDUCED BY A FACTOR OF 1.5 BEFORE FLIGHT.

EXPERIMENT NAME- SINGLE AXIS SEARCH COIL MAGNETOMETER

NSSDC ID 58-007A-02

ORIGINAL EXPERIMENT INSTITUTION- SPACE TECHNOLOGY LAB

INVESTIGATORS- C.P. SONETT, NASA-ARC , MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/11/58

EXPERIMENT BRIEF DESCRIPTION

THIS MAGNETOMETER WAS DESIGNED TO STUDY THE MAGNETIC FIELD BETWEEN THE EARTH AND THE MOON AND TO TEST FOR A LUNAR MAGNETIC FIELD. DUE TO A LAUNCH VEHICLE MALFUNCTION, IT WAS USED TO STUDY THE GEOMAGNETIC FIELD ALONG THE TRAJECTORY. THE MAGNETOMETER WAS A SINGLE SEARCH COIL DESIGNED TO MEASURE THE COMPONENT OF THE MAGNETIC FIELD PERPENDICULAR TO THE SPIN AXIS. THE MAGNETOMETER HAD A RANGE OF 6 MICROGAUSS TO 12 MILLIGAUSS. NO INFLIGHT CALIBRATION WAS PROVIDED FOR. THE MAGNETOMETER OPERATED ON OCTOBER 11, 1958, FOR PERIODS BETWEEN 1000 AND 1200 UT AND BETWEEN 1500 AND 1800 UT.

DATA SET NAME- PLOTS OF COMPONENTS OF THE MAGNETIC  
FIELD PERPENDICULAR TO THE SPIN AXIS

NSSDC ID 58-007A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/11/58 TO 10/11/58

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 14 MICROFILMED PLOTS OF THE PERPENDICULAR COMPONENT OF THE MAGNETIC FIELD (RELATIVE TO THE SPACECRAFT SPIN AXIS) VS TIME (SEC). LIMITED INFORMATION ON THE FIELD DIRECTION IS ALSO INCLUDED ON THESE PLOTS. THESE DATA ARE ON ONE REEL OF 35-MM MICROFILM. THE DATA COVER THE TIME PERIODS FROM 0954 TO 1106 UT AND FROM 1543 TO 1719 UT ON OCTOBER 11, 1958, WITH 90 PERCENT COVERAGE.

DATA SET NAME- SANBORN OSCILLOGRAMS ON MICROFILM

NSSDC ID 58-007A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/11/58 TO 10/13/58

DATA SET BRIEF DESCRIPTION

THESE RAW DATA CONSIST OF THE SANBORN OSCILLOGRAMS RECORDED FOR THE ENTIRE FLIGHT OF PIONEER 1. THEY WERE MADE FROM THE ANALOG MAGNETIC TAPES THAT WERE RECORDED AT THE MANCHESTER, HAWAII, AND SINGAPORE GROUND STATIONS. THE ENVELOPE OF THE SPIN-MODULATED SANBORN SIGNAL DETERMINES THE MAGNETIC FIELD THAT WAS MEASURED. PHASE CHANGES CAN BE READ DIRECTLY FROM THE CHARTS. THE

DATA ARE ON TWO REELS OF 35-MM MICROFILM. THE MAGNETOMETER SIGNAL HAD A 90 PERCENT COVERAGE FOR THE PERIODS FROM 0954 TO 1106 UT AND 1543 TO 1719 UT ON OCTOBER 11, 1958.

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SPACECRAFT NAME- EXPLORER 6  
OTHER NAMES- ABLE 3, 1959 DELTA 1, 59-004A

NSSDC ID 59-004A

LAUNCH DATE- 08/07/59 DATE LAST SCIENTIFIC DATA RECORDED- 10/06/59

AGENCY- USAF-NASA SPACECRAFT WEIGHT IN ORBIT- 65 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 08/07/59 ORBIT PERIOD- 765 MIN.  
APOGEE- 41622. KM ALT PERIGEE- 362. KM ALT INCLINATION- 46.9 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

EXPLORER 3 WAS A SMALL, SPHEROIDAL SATELLITE DESIGNED TO STUDY TRAPPED RADIATION OF VARIOUS ENERGIES, GALACTIC COSMIC RAYS, GEOMAGNETISM, RADIO PROPAGATION IN THE UPPER ATMOSPHERE, AND THE FLUX OF MICROMETEORITES. IT ALSO TESTED A SCANNING DEVICE DESIGNED FOR PHOTOGRAPHING THE EARTH'S CLOUD COVER. THESE STUDIES WERE CARRIED OUT IN INTERPLANETARY SPACE AND WITHIN THE MAGNETOSPHERE. THE SATELLITE WAS LAUNCHED INTO A HIGHLY ELLIPTICAL ORBIT WITH AN INITIAL LOCAL TIME OF APOGEE OF 2100 HR. THE SATELLITE WAS SPIN STABILIZED AT 2.8 RPS, WITH THE DIRECTION OF THE SPIN AXIS HAVING A RIGHT ASCENSION OF 217 DEG AND A DECLINATION OF 23 DEG. FOUR SOLAR CELL PADDLES MOUNTED NEAR ITS EQUATOR RECHARGED THE STORAGE BATTERIES WHILE IN ORBIT. EACH EXPERIMENT EXCEPT THE TELEVISION SCANNER HAD TWO OUTPUTS, DIGITAL AND ANALOG. A UHF TRANSMITTER WAS USED FOR THE DIGITAL TELEMETRY AND THE TV SIGNAL. TWO VHF TRANSMITTERS WERE USED TO TRANSMIT THE ANALOG SIGNAL. THE VHF TRANSMITTERS WERE OPERATED CONTINUOUSLY. THE UHF TRANSMITTER WAS OPERATED FOR ONLY A FEW HOURS EACH DAY. ONLY THREE OF THE SOLAR CELL PADDLES FULLY ERECTED, AND THIS OCCURRED DURING SPIN UP RATHER THAN PRIOR TO SPIN UP AS PLANNED. CONSEQUENTLY, INITIAL OPERATION OF THE PAYLOAD POWER SUPPLY WAS 63 PERCENT NOMINAL, AND THIS DECREASED WITH TIME. THE DECREASED POWER CAUSED A LOWER SIGNAL TO NOISE RATIO AFFECTING MOST OF THE DATA, ESPECIALLY NEAR APOGEE. ONE VHF TRANSMITTER FAILED ON SEPTEMBER 11, 1959, AND THE LAST CONTACT WITH THE PAYLOAD WAS MADE ON OCTOBER 6, 1959, AT WHICH TIME THE SOLAR CELL CHARGING CURRENT HAD FALLEN BELOW THAT REQUIRED TO MAINTAIN THE SATELLITE EQUIPMENT. A TOTAL OF 827 HR OF ANALOG AND 23 HR OF DIGITAL DATA WERE OBTAINED.

EXPERIMENT NAME- PROPORTIONAL COUNTER TELESCOPE

NSSDC ID 59-004A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO, CHICAGO, ILL.  
C.Y. FAN, U OF ARIZONA, TUCSON, ARIZ.  
P. MEYER, U OF CHICAGO, CHICAGO, ILL.



DATE LAST USEFUL DATA RECORDED- 10/06/59

EXPERIMENT BRIEF DESCRIPTION

A TRIPLE COINCIDENCE OMNIDIRECTIONAL PROPORTIONAL COUNTER TELESCOPE WAS USED TO OBSERVE PROTONS (E.GT. 75 MEV) AND ELECTRONS (E.GT. 13 MEV) IN THE TERRESTRIAL TRAPPED RADIATION REGION. SEVERAL MAGNETIC STORMS OCCURRED DURING THE ACTIVE LIFE OF THE EXPERIMENT. THE DATE OF TRANSMISSION OF THE LAST USEFUL INFORMATION WAS OCTOBER 6, 1959, AFTER WHICH THE TRANSMITTER FAILED TO OPERATE.

DATA SET NAME- PLOTS OF SINGLE AND TRIPLE COINCIDENCE  
COUNT RATES VS TIME ON MICROFILM

NSSDC ID 59-004A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/06/59

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF GRAPHICAL PLOTS OF TRIPLE COINCIDENCE COUNTING RATES AND SINGLE COUNTING RATES VS TIME COVERING THE TIME INTERVAL AUGUST 7, 1959, TO OCTOBER 6, 1959 (APPROXIMATELY 15 DAYS PER PLOT). THE DATA ARE TIME ORDERED ON ONE REEL OF 35-MM MICROFILM.

DATA SET NAME- TABLES OF TRIPLE COINCIDENCE COUNTS  
(TIME ORDERED) ON MICROFILM

NSSDC ID 59-004A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/02/59

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITAL DATA IN THE FORM OF TABLES OF TRIPLE COINCIDENCE TELESCOPE COUNTS AS A FUNCTION OF TIME COVERING THE TIME INTERVAL AUGUST 7, 1959, TO OCTOBER 2, 1959. THE DATA ARE ON ONE REEL OF 35-MM MICROFILM.

EXPERIMENT NAME- SCINTILLATION COUNTER

NSSDC ID 59-004A-02

ORIGINAL EXPERIMENT INSTITUTION- SPACE TECHNOLOGY LAB

INVESTIGATORS- C.P. SONETT, NASA-ARC, MOFFETT FIELD, CALIF.  
A. ROSEN, TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.  
T.A. FARLEY, U OF CALIFORNIA, LA, LOS ANGELES, CALIF.

DATE LAST USEFUL DATA RECORDED- 09/10/59

#### EXPERIMENT BRIEF DESCRIPTION

THE SCINTILLATION COUNTER EXPERIMENT WAS DESIGNED TO MAKE DIRECT OBSERVATIONS OF ELECTRONS IN THE EARTH'S RADIATION BELTS WITH A DETECTOR INSENSITIVE TO BREMSSTRAHLUNG. THIS EXPERIMENT CONSISTED OF A CYLINDRICAL PLASTIC SCINTILLATOR CEMENTED TO A PHOTOMULTIPLIER TUBE. THE INSTRUMENT VIEWED SPACE THROUGH A FOIL-COVERED WINDOW IN THE PAYLOAD SHELL. BUT THE INSTRUMENT ALSO RESPONDED TO MORE ENERGETIC PARTICLES PASSING THROUGH THE PAYLOAD SHELL. THE MINIMUM ENERGIES DETECTABLE WERE 200 KEV FOR ELECTRONS AND 2 MEV FOR PROTONS. FOR ELECTRONS BETWEEN 200 AND 500 KEV, THE DETECTOR EFFICIENCY TIMES THE OMNIDIRECTIONAL GEOMETRIC FACTOR WAS 0.0008 SQ CM COUNT PER ELECTRON WHEREAS, FOR ELECTRONS OF ENERGY GREATER THAN 500 KEV, IT WAS 0.16 SQ CM COUNT PER ELECTRON. FOR VERY PENETRATING PARTICLES, THE GEOMETRICAL FACTOR ROSE TO ITS MAXIMUM VALUE OF 3.5 SQ CM. THE SCINTILLATION COUNTER WAS SAMPLED CONTINUOUSLY FOR ANALOG TRANSMISSION AND INTERMITTENTLY (EVERY 2 MIN, 15 SEC, OR 1.9 SEC, DEPENDING UPON THE SATELLITE BIT RATE) FOR DIGITAL TRANSMISSION. THE TRANSMITTER BROADCASTING THE ANALOG DATA FOR THIS EXPERIMENT FAILED ON SEPTEMBER 11, 1959. DATA WERE RECEIVED ON A LIMITED DUTY CYCLE FROM THE DIGITAL TRANSMITTER UNTIL OCTOBER 6, 1959.

DATA SET NAME- PUBLISHED PLOTS OF REDUCED COUNT RATE VS  
TIME ON MICROFILM

NSSDC ID 59-004A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 08/07/59 TO 09/10/59

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA CONSIST OF PUBLISHED PLOTS OF COUNT RATE VS UNIVERSAL TIME. EACH PLOT IS ABOUT 3 HR LONG, AND THE PLOTS ARE TIME ORDERED. AT THE BOTTOM OF EACH PLOT IS A NOMOGRAPH GIVING THE GEOMAGNETIC LATITUDE AND RADIAL DISTANCE FROM EARTH ASSOCIATED WITH THE PLOTTED COUNT RATE AT ANY INSTANT OF TIME. THESE COUNT RATES HAVE BEEN CORRECTED FOR THE SATURATION EFFECTS INHERENT IN THE INSTRUMENT, BUT THE DETECTION EFFICIENCY CURVES MUST BE USED TO INTERPRET THESE DATA. THE DATA HAVE BEEN PUBLISHED IN 'FINAL REPORT, REDUCTION AND ANALYSIS OF EXPLORER 6 AND PIONEER 5 DATA, VOL. II,' TRW 8626-6706-RU-060, NOVEMBER 30, 1962. THE DATA ARE ALSO CONTAINED ON ONE REEL OF 35-MM MICROFILM AT NSSDC, AND THERE IS AN 80 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

DATA SET NAME- RAW DIGITAL DATA ON MICROFILM

NSSDC ID 59-004A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/02/59

#### DATA SET BRIEF DESCRIPTION

THESE RAW DATA, SUPPLIED BY TRW, CONSIST OF COMPUTER LISTINGS ON THREE REELS OF 16-MM MICROFILM OF THE DIGITAL OUTPUTS CONVERTED TO BASE 10 FROM

EACH OF THE EXPERIMENTS ON THE SATELLITE. TIME, DATE, AND GROUND STATION ARE INDICATED. THE LAST USEFUL DATA FROM THE SCINTILLATION COUNTER WERE RECEIVED ON SEPTEMBER 10, 1959.

DATA SET NAME- SANBORN OSCILLOGRAMS OF RAW TELEMETRY  
CHANNEL DATA ON MICROFILM

NSSDC ID 59-004A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/02/59 TO 10/03/59

DATA SET BRIEF DESCRIPTION

THESE RAW DATA, SUPPLIED BY TRW, CONSIST OF THE SANBORN OSCILLOGRAMS RECORDED FOR THE ENTIRE FLIGHT OF EXPLORER 6. THEY WERE MADE FROM THE ANALOG MAGNETIC TAPES THAT WERE RECORDED AT THE MANCHESTER, HAWAII, CAPE CANAVERAL, AND SINGAPORE GROUND STATIONS. THE OSCILLOGRAMS ARE PLOTS OF FREQUENCY VS TIME FOR EACH TELEMETRY CHANNEL. THE DATA ARE TIME ORDERED AND ARE AVAILABLE ON 29 REELS OF 35-MM MICROFILM. THE LAST USEFUL DATA FROM THE SCINTILLATION COUNTER WERE RECEIVED ON SEPTEMBER 10, 1959.

DATA SET NAME- SANBORN OSCILLOGRAMS OF RAW TELEMETRY  
CHANNEL DATA (FILTERED) ON MICROFILM

NSSDC ID 59-004A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/02/59 TO 09/20/59

DATA SET BRIEF DESCRIPTION

THESE RAW DATA, SUPPLIED BY TRW, CONSIST OF SANBORN OSCILLOGRAMS MADE FROM THE ANALOG MAGNETIC TAPES USING CCMB FILTERING ADDITIONAL TO THAT USED IN PRODUCING DATA SET 59-004A-02C. THE SPACE TECHNOLOGY LABORATORIES COMB FILTERING EQUIPMENT WAS USED. THIS WAS DONE PRIMARILY FOR TIMES WHEN THE SCINTILLATION COUNTER WAS OPERATING AT ITS HIGHEST RATE. THESE OSCILLOGRAMS ARE AVAILABLE ON 13 REELS OF 35-MM MICROFILM. THE LAST USEFUL DATA FROM THE SCINTILLATION COUNTER WERE RECEIVED ON SEPTEMBER 10, 1959.

EXPERIMENT NAME- ION CHAMBER AND GM COUNTER

NSSDC ID 59-004A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- J.R. WINCKLER, U OF MINNESOTA , MINNEAPOLIS, MINN.  
R.A. HOFFMAN, NASA-GSFC , GREENBELT, MD.  
R.L. ARNOLDY, U OF NEW HAMPSHIRE , DURHAM, N.H.

DATE LAST USEFUL DATA RECORDED- 10/06/59

#### EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A NEHER-TYPE INTEGRATING IONIZATION CHAMBER AND AN ANTON 302 GEIGER-MUELLER TUBE. THE GM TUBE WAS POINTED NORMAL TO THE SPACECRAFT SPIN AXIS. DUE TO THE COMPLEX, NONUNIFORM SHIELDING OF THE DETECTORS, ONLY APPROXIMATE ENERGY THRESHOLD VALUES ARE AVAILABLE. THE ION CHAMBER RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1.5 AND 23.6 MEV, RESPECTIVELY. THE GM TUBE RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 2.9 AND 36.4 MEV, RESPECTIVELY. COUNTS FROM THE GM TUBE AND PULSES FROM THE ION CHAMBER WERE ACCUMULATED IN SEPARATE REGISTERS AND TELEMETERED BY THE ANALOG SYSTEM. THE TIME THAT LAPSED BETWEEN THE FIRST TWO ION CHAMBER PULSES FOLLOWING A DATA TRANSMISSION AND THE ACCUMULATION TIME FOR 1024 GM TUBE COUNTS WERE TELEMETERED DIGITALLY. VERY LITTLE DIGITAL DATA WERE ACTUALLY TELEMETERED. THE ION CHAMBER OPERATED NORMALLY FROM LAUNCH THROUGH AUGUST 25, 1959. THE GM TUBE OPERATED NORMALLY FROM LAUNCH THROUGH OCTOBER 6, 1959.

DATA SET NAME- LISTING OF COUNTS AND PULSES ON  
MICROFILM

NSSDC ID 59-004A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/06/59

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS THE DESIGNATION OF THE SANBORN CHART FROM WHICH THE DATA WERE TAKEN, THE CHART SPEED, THE DATE AND UT OF THE OBSERVATION, AND THE SPACECRAFT PASS NUMBER. ALSO PRESENTED ARE THE NUMBER OF ION CHAMBER PULSES AND GM TUBE COUNTS AND THE TIME INTERVAL OVER WHICH THESE WERE ACCUMULATED. PULSE AND COUNT RATES ARE ALSO CALCULATED, WITH SATURATION CORRECTIONS BEING MADE IN THE CASE OF THE GM TUBE. EPHEMERIS INFORMATION (RANGE, LATITUDE, AND LONGITUDE) IS GIVEN IN BOTH GEOGRAPHIC AND GEOMAGNETIC COORDINATES. THESE DATA ARE TIME ORDERED AND COVER THE PERIOD AUGUST 7, 1959, TO OCTOBER 6, 1959.

DATA SET NAME- CALIBRATED DIGITAL DATA ON MICROFILM

NSSDC ID 59-004A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/02/59

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM COMPUTER LISTINGS SUBMITTED BY THE EXPERIMENTER. EACH FRAME LISTS THE DATE AND TIME (HR, MIN, SEC) OF THE OBSERVATIONS AND THE STATION AT WHICH THE DATA WERE RECEIVED. THE CONTENTS OF THE GM TUBE AND ION CHAMBER REGISTERS ARE PRESENTED. EPHEMERIS INFORMATION IS GIVEN AS GEOCENTRIC RANGE, RIGHT ASCENSION, DECLINATION, AND EAST LONGITUDE OF THE SPACECRAFT.

THESE DATA, WHICH ARE TIME ORDERED, COVER THE PERIOD AUGUST 7, 1959, TO OCTOBER 2, 1959. ALSO PRESENTED ARE THE CONTENTS OF THE UNIVERSITY OF CHICAGO REGISTERS FROM EXPERIMENT 59-004A-01.

DATA SET NAME- PLOTS OF COUNT RATES AND PULSE RATES ON  
MICROFILM

NSSDC ID 59-004A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/06/59

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME IS IDENTIFIED ACCORDING TO PASS NUMBER AND DATE, AND EACH CONTAINS 2 HR OF DATA. PLOTTED ARE THE LOGARITHMS OF THE ION CHAMBER PULSE RATE, THE GM TUBE COUNT RATE, AND THE RATIO OF THE TWO RATES VERSUS UT. EPHEMERIS INFORMATION IN THE FORM OF A PLOT OF GEOCENTRIC RANGE VS UT IS ALSO PRESENTED ON EACH FRAME. THESE DATA ARE TIME ORDERED AND COVER THE PERIOD AUGUST 7, 1959, TO OCTOBER 6, 1959.

DATA SET NAME- MERGED L-ORDERED COUNT RATES ON TAPE

NSSDC ID 59-004A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/02/59

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-8PI, BCD TAPE THAT WAS GENERATED AT NSSDC ON AN IBM 7094 COMPUTER. THE DATA ON THIS TAPE ARE AN L-VALUE SORTED VERSION OF THE DATA FOUND IN DATA SET 59-004A-03B, MERGED WITH EPHEMERIS INFORMATION FROM DATA SET 59-004A-00D. DATA ARE PRESENTED FOR THE FOLLOWING L VALUES -- 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, AND 8.0. DATA FROM THE GM TUBE ARE PRESENTED IN ONE FILE, AND DATA FROM THE ION CHAMBER ARE PRESENTED IN A SECOND FILE. EACH 84-CHARACTER LOGICAL RECORD CONTAINS THE COUNT RATE, RATIO OF THE MAGNETIC FIELD STRENGTH TO THE EQUATORIAL MAGNETIC FIELD STRENGTH (FOR THE SAME L VALUE), LOCAL TIME, UT, MONTH, DAY, YEAR, GEOGRAPHIC LONGITUDE AND LATITUDE, AND L VALUE.

EXPERIMENT NAME- SEARCH COIL MAGNETOMETER

NSSDC ID 59-004A-04

ORIGINAL EXPERIMENT INSTITUTION- SPACE TECHNOLOGY LAB

INVESTIGATORS- C.P. SONENTT, NASA-ARC , MOFFETT FIELD, CALIF.  
E.J. SMITH, NASA-JPL , PASADENA, CALIF.  
D.L. JUDGE, USC , PASADENA, CALIF.  
P.J. COLEMAN, JR., U OF CALIFORNIA, LA , LOS ANGELES, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/06/59

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO SURVEY THE GROSS MAGNETIC FIELD OF THE EARTH, TO INVESTIGATE THE INTERPLANETARY MAGNETIC FIELD, AND TO DETECT EVIDENCE OF ANY LUNAR MAGNETIC FIELD. NO INTERPLANETARY OR LUNAR MAGNETIC FIELDS WERE ABLE TO BE MEASURED, HOWEVER, BECAUSE OF THE SPACECRAFT'S LOW APOGEE. THE INSTRUMENT WAS SIMILAR TO THAT FLWVN ON PIONEER 1 AND CONSISTED OF A SINGLE SEARCH COIL MOUNTED SO THAT IT MEASURED THE MAGNETIC FIELD PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THE INSTRUMENT HAD A RANGE OF 6 MICROGAUSS TO 12 MILLIGAUSS. NO INFLIGHT CALIBRATION WAS PROVIDED FOR. SOME DEGRADATION OF THE TELEMETRY SIGNAL OCCURRED DUE TO IONOSPHERIC EFFECTS. INSUFFICIENT GROUND OBSERVATIONS ON THE ELECTRON CONTENT OF THE IONOSPHERE PREVENTED CORRECTING THE DATA FOR THESE EFFECTS. THE EXPERIMENT HAD BOTH DIGITAL AND ANALOG OUTPUTS. THE MAGNETOMETER AMPLITUDE AND PHASE WERE SAMPLED CONTINUOUSLY FOR ANALOG TRANSMISSION AND INTERMITTENTLY (EVERY 2 MIN, 15 SEC, OR 1.9 SEC, DEPENDING ON SATELLITE BIT RATE) FOR DIGITAL TRANSMISSION. THE MAGNETOMETER WORKED UNTIL LOSS OF TELEMETRY SIGNAL ON OCTOBER 6, 1959.

DATA SET NAME- PLOTS OF REDUCED MAGNETIC FIELD DATA ON  
MICROFILM

NSSDC ID 59-004A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/08/59 TO 09/10/59

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PLOTS OF ALL THE AVAILABLE REDUCED MAGNETIC FIELD DATA (ANALOG AND DIGITAL) OBTAINED BY THIS EXPERIMENT. THE DATA COMPILATION CONSISTS OF LINEAR GRAPHS OF THE PHASE ANGLE AND SEMILOG PLOTS OF THE PERPENDICULAR FIELD COMPONENT VS TIME. THIS PHASE ANGLE WAS THE ANGLE BETWEEN THE COMPONENT OF THE FIELD PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND THE PROJECTION INTO THE SPACECRAFT EQUATORIAL PLANE OF A UNIT VECTOR POINTING IN THE DIRECTION OF THE SUN. DATA POINTS THAT WERE DERIVED FROM ANALOG DATA ARE INDICATED, AS IS THE RECEIVING STATION. DATA POINTS THAT WERE DERIVED FROM DIGITAL DATA ARE ALSO INDICATED. IN ADDITION TO THE MAGNETOMETER DATA, THE GRAPHS CONTAIN CURVES REPRESENTING THEORETICAL VALUES OF THE PHASE ANGLE AND THE PERPENDICULAR FIELD COMPONENT. THESE WERE BASED ON AN EIGHT-COEFFICIENT, SPHERICAL HARMONIC EXPANSION OF THE GEOMAGNETIC FIELD. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM, ARE TIME ORDERED, AND HAVE A 70 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

DATA SET NAME- SANBORN OSCILLOGRAM PLOTS OF RAW  
TELEMETRY CHANNEL DATA ON MICROFILM

NSSDC ID 59-004A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/08/59 TO 10/03/59

DATA SET BRIEF DESCRIPTION

THESE RAW DATA, SUPPLIED BY THE EXPERIMENTER, CONSIST OF THE SANBORN OSCILLOGRAMS RECORDED FOR THE ENTIRE FLIGHT OF EXPLORER 6. THEY WERE MADE FROM THE ANALOG MAGNETIC TAPES THAT WERE RECORDED AT THE MANCHESTER, HAWAII, CAPE CANAVERAL, AND SINGAPORE GROUND STATIONS. THE OSCILLOGRAMS ARE PLOTS OF FREQUENCY VS TIME FOR EACH TELEMETRY CHANNEL. THE DATA ARE TIME ORDERED AND ARE AVAILABLE ON 29 REELS OF 35-MM MICROFILM.

DATA SET NAME- SANBORN OSCILLOGRAM PLOTS OF RAW  
TELEMETRY DATA (FILTERED) ON MICROFILM

NSSDC ID 59-004A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/08/59 TO 09/20/59

DATA SET BRIEF DESCRIPTION

THESE RAW DATA, SUPPLIED BY THE EXPERIMENTER, CONSIST OF SANBORN OSCILLOGRAMS MADE FROM THE ANALOG MAGNETIC TAPES USING COMB FILTERING ADDITIONAL TO THAT USED IN PRODUCING DATA SET 59-004A-04B. THE SPACE TECHNOLOGY LABORATORIES COMB FILTERING EQUIPMENT WAS USED. THIS WAS DONE PRIMARILY FOR TIMES WHEN THE SCINTILLATION COUNTER WAS OPERATING AT ITS HIGHEST RATE. THESE OSCILLOGRAMS ARE AVAILABLE ON 13 REELS OF 35-MM MICROFILM.

DATA SET NAME- DIGITAL OUTPUTS OF RAW TELEMETRY DATA ON  
MICROFILM

NSSDC ID 59-004A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/07/59 TO 10/02/59

DATA SET BRIEF DESCRIPTION

THESE RAW DATA, SUPPLIED BY TRW, CONSIST OF COMPUTER LISTINGS ON THREE REELS OF 16-MM MICROFILM OF THE DIGITAL OUTPUTS CONVERTED TO BASE 10 FROM EACH OF THE EXPERIMENTS ON THE SATELLITE. TIME, DATE, AND GROUND STATION ARE INDICATED.

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SPACECRAFT NAME- EXPLORER 7  
OTHER NAMES- 1959 IOTA 1, S 1A, 59-009A

NSSDC ID 59-009A

LAUNCH DATE- 10/13/59 DATE LAST SCIENTIFIC DATA RECORDED- 02/28/61

AGENCY- US ARMY SPACECRAFT WEIGHT IN ORBIT- 41.87 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 10/13/59 ORBIT PERIOD- 101.2 MIN.  
APOGEE- 1091. KM ALT PERIGEE- 555. KM ALT INCLINATION- 50.4 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

EXPLORER 7 WAS INSTRUMENTED FOR THE STUDY OF SOLAR X-RAY AND LYMAN-ALPHA FLUX, INFRARED HEAT BALANCE, HEAVY PRIMARY COSMIC RAYS (Z ABOVE 5), TRAPPED PARTICLES AND COSMIC RAYS, AND MICROMETEORITES. THE SPACECRAFT WAS POWERED BY BOTH SOLAR CELLS AND CHEMICAL BATTERIES. ITS SPIN AXIS HAD A 310-DEG RIGHT ASCENSION AND A 31-DEG DECLINATION. SPIN RATE DECREASED FROM 360 RPM TO 312 RPM AFTER THE FIRST 300 DAYS IN ORBIT. A 15-MW, 108-MHZ TRACKING SIGNAL AND A 1-W, 20-MHZ TELEMETRY SIGNAL WERE USED FOR THE REAL-TIME-ONLY TRANSMISSION. THE LAST 108-MHZ TRANSMISSION WAS RECEIVED ON DECEMBER 4, 1959. THE 20-MHZ TELEMETRY SYSTEM PROVIDED USEFUL SPACECRAFT-OBTAINED DATA UNTIL FEBRUARY 1961. TRANSMISSION CONTINUED UNTIL AUGUST 24, 1961, DURING WHICH TIME INFORMATION ON IONOSPHERIC CONTENT WAS DEDUCED FROM FARADAY ROTATION EFFECTS IN THE SIGNAL.

EXPERIMENT NAME- THERMAL RADIATION

NSSDC ID 59-009A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

INVESTIGATORS- V.E. SUOMI, U OF WISCONSIN, MADISON, WIS.

DATE LAST USEFUL DATA RECORDED- 02/28/61

#### EXPERIMENT BRIEF DESCRIPTION

THE EXPLORER 7 THERMAL RADIATION EXPERIMENT WAS DESIGNED TO MEASURE SOLAR, REFLECTED, AND TERRESTRIAL RADIATION IN ORDER TO OBTAIN A CLEARER UNDERSTANDING OF THE DRIVING FORCES OF THE EARTH-ATMOSPHERE SYSTEM. THE PRIMARY INSTRUMENTATION CONSISTED OF BOLOMETERS IN THE FORM OF HOLLOW SILVER HEMISPHERES THAT WERE THERMALLY INSULATED FROM EUT IN CLOSE PROXIMITY TO SPECIALLY ALUMINIZED MIRRORS. THE HEMISPHERES THEREBY BEHAVED VERY MUCH LIKE ISOLATED SPHERES IN SPACE. TWO OF THE HEMISPHERES HAD BLACK COATINGS AND RESPONDED ABOUT EQUALLY TO SOLAR AND TERRESTRIAL RADIATION. A THIRD HEMISPHERE, WHICH WAS WHITE, WAS MORE SENSITIVE TO TERRESTRIAL RADIATION THAN TO SOLAR RADIATION. A FOURTH, WHICH HAD A GOLD METAL SURFACE, WAS MORE SENSITIVE TO SOLAR RADIATION THAN TO TERRESTRIAL RADIATION. A TABOT-SURFACED HEMISPHERE, PROTECTED FROM DIRECT SUNLIGHT, WAS USED TO MEASURE THE REFLECTED SUNLIGHT. A GLASS-COATED BEAD THERMISTOR WAS MOUNTED ON THE TOP OF EACH HEMISPHERE TO MEASURE TEMPERATURE. A COMPLETE SET OF FOUR TEMPERATURE OBSERVATIONS AND ONE REFERENCE SAMPLE REQUIRED 30 SEC. THUS, IN EACH ORBIT, ABOUT 180 COMPLETE DATA SETS COULD BE OBTAINED. THE EXPERIMENT WAS A SUCCESS, AND DATA WERE OBTAINED FROM LAUNCH UNTIL FEBRUARY 28, 1961.

DATA SET NAME- SELECTED WHITE SENSOR TEMPERATURE  
(NIGHTTIME) VALUES ON TAPE

NSSDC ID 59-009A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/15/59 TO 05/24/60



DATA SET BRIEF DESCRIPTION

SELECTED WHITE SENSOR DATA FROM THE EXPLORER 7 THERMAL RADIATION EXPERIMENT ARE AVAILABLE ON ONE MAGNETIC TAPE. THIS 7-TRACK, 200-BPI, BCD TAPE CONTAINS WHITE SENSOR TEMPERATURES AT NIGHT, LONG-WAVE RADIATION DATA, AND ORBIT POSITION DATA. THE TAPE FORMAT IS GIVEN IN DATA USERS' NOTE NSSDC 67-17, ENTITLED 'EXPLORER 7 (1959 IOTA 1) THERMAL RADIATION EXPERIMENT.'

DATA SET NAME- TEMPERATURE VALUES FROM ALL SENSORS ON  
TAPE

NSSDC ID 59-009A-018

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/15/59 TO 06/04/60

DATA SET BRIEF DESCRIPTION

TEMPERATURE VALUES TAKEN FROM ALL SENSORS OF THE EXPLORER 7 THERMAL RADIATION EXPERIMENT ARE AVAILABLE ON TWO MAGNETIC TAPES. THESE 7-TRACK, 200-BPI, BINARY TAPES PRODUCED ON THE CDC 1604 HAVE ONE FILE PER TAPE AND CONTAIN SENSOR TEMPERATURES FOR ALL READOUTS THAT WERE PROCESSED. THE COMPLETE TAPE DESCRIPTION AND FORMAT IS GIVEN IN DATA USERS' NOTE NSSDC 67-17, ENTITLED 'EXPLORER 7 (1959 IOTA 1) THERMAL RADIATION EXPERIMENT.'

EXPERIMENT NAME- HEAVY PRIMARY COSMIC RAY

NSSDC ID 59-009A-03

ORIGINAL EXPERIMENT INSTITUTION- BARTOL RESEARCH FOUND

INVESTIGATORS- M.A. POMERANTZ, BARTOL RESEARCH FOUND , SWARTHMORE, PA.

DATE LAST USEFUL DATA RECORDED- 05/31/60

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE OMNIDIRECTIONAL FLUX OF HEAVY PRIMARY COSMIC RAYS IN THE RIGIDITY RANGE 1 TO 15.5 GV. PARTICLES WITH ATOMIC NUMBERS (Z) GREATER THAN 5, 8, AND 15 WERE COUNTED SEPARATELY BY AN IONIZATION CHAMBER IN WHICH EACH INCIDENT PARTICLE YIELDED A PULSE. PULSE AMPLITUDE WAS SUBSTANTIALLY INDEPENDENT OF THE ENERGY OF THE INCIDENT PARTICLE BUT WAS PROPORTIONAL TO THE SQUARE OF ITS Z VALUE. EACH OF THE THREE COUNTING RATES WAS DETERMINED EVERY 15 SEC. THE EXPERIMENT PERFORMED AS PLANNED FROM LAUNCH UNTIL OCTOBER 25, 1959. ABOUT 80 PERCENT OF THE DATA ACQUIRED FOR THE OCTOBER 25, 1959, TO MAY 31, 1960, PERIOD ARE USEFUL, WITH MOST PROBLEMS OCCURRING IN THE LOWEST Z MODE. VERY LITTLE USEFUL DATA WERE ACQUIRED AFTER MAY 31, 1960.

DATA SET NAME- COUNTING RATES OF HEAVY PRIMARY COSMIC  
                  RAYs ON MAGNETIC TAPE

NSSDC ID 59-009A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/13/59 TO 05/31/60

DATA SET BRIEF DESCRIPTION

THE EXPERIMENTER HANDLED HIS DATA AS FOLLOWS. HE DEFINED BOXES OF 5-DEG LATITUDE, 10-DEG LONGITUDE, AND 100-KM THICKNESS. DATA COUNTS OBTAINED DURING A GIVEN SPACECRAFT PASS THROUGH A GIVEN BOX WERE ACCUMULATED FROM THE 15-SEC COUNTS. THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE PRODUCED AT NSSDC USING APPROXIMATELY 17,250 PUNCHED CARDS SUBMITTED BY THE EXPERIMENTER. EACH 80-CHARACTER LOGICAL RECORD IS A CARD IMAGE, AND EACH CONTAINS THE TIME, THE GEOGRAPHIC LATITUDE, LONGITUDE, AND ALTITUDE OF THE BOX, ACCUMULATED COUNTS FOR PARTICLES WITH ATOMIC NUMBER (Z) GREATER THAN 5, ACCUMULATION TIME (TIME SPACECRAFT IS IN BOX, TYPICALLY 1 TO 2 MIN), AND COMPUTED AND CORRELATIVE DATA. THE LATTER INCLUDES MAGNETIC CUTOFF RIGIDITY, NEUTRON MONITOR DATA, KP AND RZ INDICES, AND 10.7-CM SOLAR FLUX. IT SHOULD BE NOTED THAT NO DATA FROM THE Z ABOVE 8 OR 15 CHANNELS ARE INCLUDED. DATA ARE CONTAINED FOR THE FOLLOWING THREE TIME PERIODS -- OCTOBER 13, 1959, TO OCTOBER 24, 1959, NOVEMBER 1, 1959, TO MARCH 15, 1960, AND APRIL 12, 1960, TO MAY 31, 1960. IN EACH INTERVAL, COVERAGE IS ABOUT 50 PERCENT COMPLETE.

EXPERIMENT NAME- RADIATION AND SOLAR PROTON

NSSDC ID 59-009A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA  
                  G.H. LUDWIG, NASA-GSFC , GREENBELT, MD.  
                  L.A. FRANK, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 02/28/61

EXPERIMENT BRIEF DESCRIPTION

TWO OMNIDIRECTIONAL GEIGER COUNTERS (ANTON 302 AND 112) WERE USED TO CONDUCT A COMPREHENSIVE SPATIAL AND TEMPORAL MONITORING OF TOTAL COSMIC-RAY INTENSITY, GEOMAGNETICALLY TRAPPED CORPUSCULAR RADIATION, AND SOLAR PROTONS. THE DETECTOR WAS SENSITIVE TO PROTONS (E.GT. 20 MEV) AND ELECTRONS (E.GT. 30 KEV). THE EXPERIMENT OPERATED SATISFACTORILY FROM LAUNCH UNTIL FEBRUARY 28, 1961, EXCEPT FOR A BRIEF PERIOD IN SEPTEMBER AND OCTOBER 1960.

DATA SET NAME- REDUCED COUNT RATE AND ORBITAL DATA ON  
MAGNETIC TAPE

NSSDC ID 59-009A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 10/13/59 TO 02/28/61

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED DATA ON FOURTEEN 7-TRACK, BCD MAGNETIC TAPES WRITTEN AT 556 BPI WITH A LOGICAL (AND PHYSICAL) RECORD LENGTH OF 114 CHARACTERS. THE DATA CONSIST OF DETECTOR COUNTING RATES ALONG WITH ORBITAL INFORMATION IN A TIME-ORDERED FORMAT COVERING THE PERIOD OCTOBER 13, 1959, TO FEBRUARY 28, 1961.

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SPACECRAFT NAME- PIONEER 5  
OTHER NAMES- 1960 ALPHA 1, 00-001A

NSSDC ID 60-001A

LAUNCH DATE- 03/11/60 DATE LAST SCIENTIFIC DATA RECORDED- 06/26/60

AGENCY- NASA-USAF SPACECRAFT WEIGHT IN ORBIT- 43 KG

ORBIT TYPE- HELIOCENTRIC EPOCH- 03/11/60 ORBIT PERIOD- 311.6 DAYS  
APOGEE-0.9931 AU RAD PERIGEE-0.7061 AU RAD INCLINATION- 3.35 DEGREES

SPACECRAFT BRIEF DESCRIPTION

PIONEER 5 (1960 ALPHA 1) WAS A SPIN-STABILIZED SPACE PROBE USED TO INVESTIGATE INTERPLANETARY SPACE BETWEEN THE ORBITS OF EARTH AND VENUS. THE SPACECRAFT MEASURED MAGNETIC FIELD PHENOMENA, SOLAR FLARE PARTICLES, AND IONIZATION IN THE INTERPLANETARY REGION. THE DIGITAL DATA WERE TRANSMITTED AT 1, 8, AND 64 BPS, DEPENDING ON THE DISTANCE OF THE SPACECRAFT FROM THE EARTH AND THE SIZE OF THE RECEIVING ANTENNA. THE GREATER DISTANCES REQUIRED THE USE OF A SLOWER BIT RATE. WEIGHT LIMITATIONS ON THE SOLAR CELLS PREVENTED CONTINUOUS OPERATION OF THE TELEMETRY TRANSMITTERS. ABOUT FOUR OPERATIONS OF 25-MIN DURATION WERE SCHEDULED PER DAY WITH OCCASIONAL INCREASES DURING TIMES OF SPECIAL INTEREST. A TOTAL OF 138.9 HR OF OPERATION WERE COMPLETED, AND OVER 3 MILLION BINARY BITS OF DATA WERE RECEIVED. THE MAJOR PORTION OF THE DATA WAS RECEIVED AT THE MANCHESTER AND HAWAII TRACKING STATIONS BECAUSE THEIR ANTENNAS PROVIDED GRID RECEPTION. PIONEER 5 PERFORMED NORMALLY UNTIL APRIL 30, 1960, AFTER WHICH TELEMETRY TRANSMISSION BECAME TOO INFREQUENT FOR ANY SIGNIFICANT ADDITION TO THE DATA. THE SPACECRAFT ESTABLISHED A COMMUNICATIONS LINK WITH THE EARTH FROM A RECORD DISTANCE OF 22.5 MILLION MILES ON JUNE 26, 1960, WHICH WAS THE LAST DAY OF TRANSMISSION.

EXPERIMENT NAME- PROPORTIONAL COUNTER TELESCOPE

NSSDC ID 60-001A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.  
C.Y. FAN, U OF ARIZONA , TUCSON, ARIZ.  
P. MEYER, U OF CHICAGO , CHICAGO, ILL.

DATE LAST USEFUL DATA RECORDED- 05/16/60

EXPERIMENT BRIEF DESCRIPTION

A TRIPLE COINCIDENCE OMNIDIRECTIONAL PROPORTIONAL COUNTER TELESCOPE WAS USED TO OBSERVE TERRESTRIAL TRAPPED RADIATION AND SOLAR PARTICLES (PROTONS E.GT. 75 MEV, ELECTRONS E.GT. 13 MEV). MEASUREMENTS WERE OBTAINED FOR ABOUT 2 MONTHS DURING WHICH A WEEK OF QUIESCENT MAGNETIC FIELD CONDITIONS FOLLOWED BY TWO GEOMAGNETIC STORMS CLOSELY SPACED IN TIME OCCURRED. THE DATE OF TRANSMISSION OF THE LAST USEFUL INFORMATION WAS MAY 16, 1960.

DATA SET NAME- PLOTS OF SINGLE AND TRIPLE COINCIDENCE  
COUNT RATES VS TIME ON MICROFILM

NSSDC ID 60-001A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/60 TO 05/10/60

DATA SET BRIEF DESCRIPTION

THE DATA CONSIST OF 10 GRAPHICAL PLOTS OF TRIPLE COINCIDENCE COUNTING RATES AND SINGLE COUNTING RATES PLOTTED VS TIME. THE DATA COVER THE PERIOD MARCH 11, 1960, TO MAY 10, 1960. ALSO INCLUDED ARE TABLES OF TRIPLE COINCIDENCE COUNTING RATES (APRIL 2, 1960, TO MAY 4, 1960). THE DATA ARE TIME ORDERED ON ONE REEL OF 35-MM MICROFILM.

DATA SET NAME- TABLES OF SINGLE AND TRIPLE COINCIDENCE  
COUNTS (TIME ORDERED) ON MICROFILM

NSSDC ID 60-001A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/60 TO 05/16/60

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TABLES OF RAW SINGLE AND TRIPLE COINCIDENCE COUNTS FROM THE PROPORTIONAL COUNTER TELESCOPE. THE COUNTS ARE IN A TIME-ORDERED FORMAT COVERING THE TIME INTERVAL FROM MARCH 11, 1960, TO MAY 16, 1960. THE DATA ARE ON FIVE REELS OF 35-MM MICROFILM. ALSO INCLUDED IN

THE COMPUTER-PRODUCED TABLES ARE MICROMETEORITE MEASUREMENTS, GEIGER COUNTER AND ION CHAMBER COUNTS, AND SEARCH COIL MAGNETOMETER DATA.

EXPERIMENT NAME- SEARCH COIL MAGNETOMETER

NSSDC ID 60-001A-02

ORIGINAL EXPERIMENT INSTITUTION- SPACE TECHNOLOGY LAB

INVESTIGATORS- P.J. COLEMAN, JR., U OF CALIFORNIA, LA , LOS ANGELES, CALIF.  
E.W. GREENSTADT, TRW SYSTEMS GROUP , REDONDO BEACH, CALIF.  
D.L. JUDGE, USC , PASADENA, CALIF.  
C.P. SONETT, NASA-ARC , MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- 05/06/60

#### EXPERIMENT BRIEF DESCRIPTION

THIS SEARCH COIL MAGNETOMETER, WHICH WAS SIMILAR TO THOSE FLOWN ON PIONEER 1 AND EXPLORER 6, WAS DESIGNED TO STUDY THE INTERPLANETARY MAGNETIC FIELD. THE DETECTOR CONSISTED OF A SINGLE SEARCH COIL THAT WAS MOUNTED ON THE SPACECRAFT SO THAT IT MEASURED THE MAGNETIC FIELD PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THE MAGNETOMETER COULD MEASURE FIELDS FROM 1 MICROGAUSS TO 12 MILLIGAUSS. NO INFLIGHT CALIBRATION WAS PROVIDED FOR. THE EXPERIMENT HAD BOTH DIGITAL AND ANALOG OUTPUTS. THE MAGNETOMETER AMPLITUDE AND PHASE WERE SAMPLED CONTINUOUSLY FOR ANALOG TRANSMISSION AND INTERMITTENTLY (EVERY 96, 12, AND 1.5 SEC, DEPENDING ON SATELLITE BIT RATE) FOR DIGITAL TRANSMISSION. APPROXIMATELY 21,000 DIGITAL READINGS OF THE MAGNETIC FIELD AMPLITUDE WERE OBTAINED. THE LAST DATA WERE TAKEN ON MAY 18, 1960. HOWEVER, NO INFORMATION WAS OBTAINED ON THE PHASE ANGLE (ANGLE BETWEEN THE COMPONENT OF THE FIELD PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND THE PROJECTION INTO THE SPACECRAFT EQUATORIAL PLANE OF A UNIT VECTOR POINTING IN THE DIRECTION OF THE SUN).

DATA SET NAME- TABLES AND PLOTS OF MAGNETIC FIELD  
AMPLITUDE ON MICROFILM

NSSDC ID 60-001A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/60 TO 05/06/60

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA ARE AVAILABLE IN THE TRW PUBLICATION, 'A COMPENDIUM AND CRITIQUE OF PIONEER V MAGNETOMETER DATA,' BY EUGENE W. GREENSTADT, SPACE TECHNOLOGY LABORATORIES, 9890-6001-RU000, JANUARY 12, 1965. THE DATA ARE ALSO AVAILABLE AT NSSDC ON ONE REEL OF 16-MM MICROFILM. THE DATA ARE COMPILED ACCORDING TO INDIVIDUAL DIGITAL TELEMETRY TRANSMISSION PERIODS, AND THESE TIME PERIODS ARE ORDERED CHRONOLOGICALLY. WITHIN EACH TELEMETRY TRANSMISSION PERIOD ALL THE DIGITAL OUTPUTS ARE LISTED IN DECREASING ORDER.

AND THE NUMBER OF TIMES THAT NUMBER WAS TRANSMITTED IS INDICATED. THE FOLLOWING INFORMATION IS CONTAINED ON TABLES IN THE PUBLICATION (AND ON MICROFILM) -- DATE, TIME (BEGINNING AND END), TRANSMISSION SEQUENCE NUMBER, BIT RATE, DIGITAL READING, NUMBER OF DATA POINTS AT EACH DIGITAL READING AND THE TOTAL FOR EACH TRANSMISSION, AND MAGNITUDE OF THE FIELD (IN GAMMAS) AT THE CENTER OF THE DIGITAL READING. THE DATA WERE REDUCED ASSUMING A TEMPERATURE OF 10 DEG C. THE TABLES HAVE A 10 PERCENT COVERAGE FOR THE PERIOD INDICATED. ALSO INCLUDED WITH THESE DATA ARE SOME STATISTICAL PLOTS. FOR EACH DAY FROM MARCH 12, 1960, TO APRIL 30, 1960, THE MEASURED FIELD IN GAMMAS VS THE PERCENT OF THE MEASURED POINTS THAT LIE BELOW VARIOUS VALUES OF THE MEASURED FIELD IS PLOTTED.

DATA SET NAME- RAW EXPERIMENT DIGITAL OUTPUTS (COMPUTER LISTINGS) ON MICROFILM

NSSDC ID 60-001A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/60 TO 05/17/60

DATA SET BRIEF DESCRIPTION

THESE RAW DATA CONSIST OF COMPUTER LISTINGS ON FIVE REELS OF 16-MM MICROFILM OF THE DIGITAL OUTPUTS FROM EACH OF THE EXPERIMENTS ON THE SATELLITE. TIME, DATE, AND GROUND STATION ARE INDICATED. THE LAST USEFUL DATA FROM THE MAGNETOMETER WERE RECEIVED ON MAY 6, 1960.

DATA SET NAME- RAW ANALOG DATA FOR SANBORN OSCILLOGRAMS ON MICROFILM

NSSDC ID 60-001A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/60 TO 07/05/60

DATA SET BRIEF DESCRIPTION

THESE RAW DATA CONSIST OF THE SANBORN OSCILLOGRAMS RECORDED FOR THE ENTIRE TELEMETRY LIFE OF PIONEER 5. THEY WERE MADE FROM THE ANALOG MAGNETIC TAPES THAT WERE RECORDED AT THE MANCHESTER, CAPE CANAVERAL, SINGAPORE, AND HAWAII GROUND STATIONS. THE OSCILLOGRAMS ARE PLOTS OF FREQUENCY VS TIME FOR EACH ANALOG TELEMETRY CHANNEL. THE DATA ARE TIME ORDERED AND ARE AVAILABLE ON 12 REELS OF 35-MM MICROFILM. THE LAST USEFUL DATA FROM THE MAGNETOMETER WERE RECEIVED ON MAY 6, 1960.

EXPERIMENT NAME- ION CHAMBER AND GM TUBE

NSSDC ID 60-001A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- J.R. WINCKLER, U OF MINNESOTA, MINNEAPOLIS, MINN.  
R.L. ARNOLDY, U OF NEW HAMPSHIRE, DURHAM, N.H.  
R.A. HOFFMAN, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 04/29/60

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A NEHER-TYPE INTEGRATING IONIZATION CHAMBER AND AN ANTON 302 GEIGER COUNTER. THE GEIGER COUNTER WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS. DUE TO THE COMPLEX, NONUNIFORM SHIELDING OF THE DETECTORS, THE ION CHAMBER RESPONDED QUASI-OMNIDIRECTIONALLY TO PROTONS GREATER THAN ABOUT 25 MEV WHILE THE GEIGER COUNTER RESPONDED QUASI-OMNIDIRECTIONALLY TO PROTONS GREATER THAN ABOUT 35 MEV. ENERGY THRESHOLDS FOR QUASI-OMNIDIRECTIONAL RESPONSES TO ELECTRONS WERE APPROXIMATELY 1.6 AND 2.9 MEV FOR THE ION CHAMBER AND GEIGER COUNTER, RESPECTIVELY. COUNTS FROM THE GEIGER COUNTER AND PULSES FROM THE ION CHAMBER WERE ACCUMULATED IN SEPARATE REGISTERS AND TELEMETERED BY BOTH ANALOG AND DIGITAL SYSTEMS. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH MAY 17, 1960. TELEMETRY NOISE LIMITED THE TIMESPAN OF USEFUL DATA TO THE PERIOD FROM LAUNCH THROUGH APRIL 29, 1960.

DATA SET NAME- TABULATIONS OF COUNT AND PULSE RATES VS  
TIME ON MICROFILM

NSSDC ID 60-001A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/60 TO 04/29/60

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED FROM TABULATIONS SUBMITTED BY THE EXPERIMENTER. GM TUBE DATA INCLUDE THE VALUE OF THE GM TUBE REGISTER, THE CHANGE IN THIS REGISTER BETWEEN TWO SUCCESSIVE DATA TRANSMISSIONS, A CALCULATED COUNTING RATE, AND A COUNTING RATE CORRECTED FOR THE DEAD TIME OF THE REGISTER. DATA FROM THE ION CHAMBER INCLUDE THE VALUE OF THE ION CHAMBER REGISTER, THE CHANGE IN THIS REGISTER BETWEEN TWO SUCCESSIVE DATA TRANSMISSIONS, A CALCULATED PULSE RATE, AND NORMALIZED AND DEAD-TIME CORRECTED PULSE RATES. THE DATE, THE ON AND OFF TIMES IN UT OF THE TRANSMISSION, AND THE RECEIVING STATION ARE GIVEN FOR EACH DATA VALUE. THESE DATA, WHICH ARE TIME ORDERED AND CONTAIN NO EPHEMERIS INFORMATION, COVER APPROXIMATELY 20 PERCENT OF THE PERIOD FROM MARCH 11, 1960, TO APRIL 25, 1960.

DATA SET NAME- COMPUTER LISTING OF COUNT AND PULSE  
RATES VS TIME ON MICROFILM

NSSDC ID 60-001A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/60 TO 05/17/60

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. VALUES IN THE GM AND ION CHAMBER REGISTERS ARE GIVEN. THE EPHEMERIS INFORMATION PRESENTED INCLUDES THE SPACECRAFT RADIAL DISTANCE FROM THE EARTH AND FROM THE SUN.

PERPENDICULAR DISTANCE TO THE ECLIPTIC PLANE, AND RIGHT ASCENSION AND DECLINATION. THE DATE, THE ON AND OFF TIMES (UT) OF THE TRANSMISSION, AND THE RECEIVING STATION ARE GIVEN FOR EACH DATA VALUE. INVENTORIES OF THE DATA RECEIVED FROM EACH STATION IMMEDIATELY PRECEDE THE DATA LISTING FROM EACH STATION. THESE DATA, WHICH ARE TIME ORDERED FOR EACH STATION, COVER APPROXIMATELY 20 PERCENT OF THE PERIOD FROM MARCH 11, 1960, TO MAY 17, 1960. DATA FOR THAT PORTION OF THE PERIOD AFTER APRIL 29, 1960, ARE NOISY.

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SPACECRAFT NAME- SOLRAD 1 NSSDC ID 60-007B  
 OTHER NAMES- 1960 ETA 2, GREB 1, SUNRAY 1, SR 1,  
 60-007B  
 LAUNCH DATE- 06/22/60 DATE LAST SCIENTIFIC DATA RECORDED- 04/18/61  
 AGENCY- US NAVY SPACECRAFT WEIGHT IN ORBIT- 19.05 KG  
 ORBIT TYPE- GEOCENTRIC EPOCH- 06/22/60 ORBIT PERIOD- 101.7 MIN.  
 APOGEE- 1061. KM ALT PERIGEE- 614. KM ALT INCLINATION- 66.69 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE SOLRAD 1 SPIN-STABILIZED SPACECRAFT WAS PUT INTO ORBIT BY THE SAME LAUNCH VEHICLE THAT LAUNCHED TRANSIT 2A. THE SPACECRAFT CARRIED TWO LYMAN-ALPHA PHOTOMETERS AND ONE X-RAY PHOTOMETER MOUNTED ALONG THE EQUATOR OF THE SATELLITE LOOKING OUT IN A DIRECTION PARALLEL TO ITS EQUATORIAL PLANE. A VISIBLE LIGHT ASPECT SYSTEM THAT USED A VACUUM PHOTOCCELL TO DETERMINE THE SOLAR ASPECT ANGLE WAS ALSO ATTACHED. THE ASPECT SYSTEM HAD THE SAME DIRECTION OF VIEW AS THE UV PHOTOMETERS AND THE OPPOSITE VIEW WITH RESPECT TO THE X-RAY PHOTOMETER. THE OBJECTIVE OF THE PROJECT WAS TO MAKE LONG-TERM CONTINUOUS OBSERVATIONS OF THE SOLAR HYDROGEN LYMAN-ALPHA AND SOFT X-RAY EMISSIONS AND TO CORRELATE THESE EMISSIONS WITH GROUND-BASED OBSERVATIONS. THE SATELLITE IS STILL IN ORBIT AS OF FEBRUARY 1971.

EXPERIMENT NAME- X-RAY AND LYMAN-ALPHA STUDY NSSDC ID 60-007B-01  
 ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB  
 INVESTIGATORS- H.D. FRIEDMAN, NAVAL RESEARCH LAB , WASHINGTON, D.C.  
 DATE LAST USEFUL DATA RECORDED- 11/01/60

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO PROVIDE LONG-TERM OBSERVATIONS OF THE IONIZING RADIATION FROM THE SUN BY MONITORING THE SOLAR EMISSION IN THE X-RAY (2 TO 8 A) AND THE HYDROGEN LYMAN-ALPHA (1050 TO 1350 A) REGIONS. THE MEASUREMENTS WERE MADE OVER THE PERIOD JUNE 22, 1960, TO NOVEMBER 1, 1960, BY TWO LYMAN-ALPHA PHOTOMETERS AND ONE X-RAY PHOTOMETER MOUNTED ON THE



EQUATOR OF THE SATELLITE. THE LYMAN-ALPHA DETECTORS WERE NITRIC OXIDE ION CHAMBERS WHEREAS THE X-RAY DETECTOR WAS AN ARGON ION CHAMBER. TO ELIMINATE THE RESPONSES OF THE LATTER DETECTOR FROM VAN ALLEN BELT RADIATION (CHARGED PARTICLES), A 2400-GAUSS PERMANENT MAGNET WAS INCORPORATED INTO THE CHAMBER DESIGN. THIS SHIELDING MAGNET, HOWEVER, HAD A SIGNIFICANT EFFECT UPON THE ROTATIONAL STABILITY OF THE SATELLITE AND, COMBINED WITH OTHER FACTORS, WAS RESPONSIBLE FOR A SEVERE REDUCTION IN THE AMOUNT OF DATA RECEIVED. THE DATA THAT WERE RECEIVED, HOWEVER, WERE OF GOOD QUALITY.

DATA SET NAME- X-RAY (2 TO 8 A) AND UV (1050 TO 1350 A)      NSSDC ID 60-0078-01A  
DATA

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 06/22/60 TO 11/01/60

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS IN A PUBLISHED REPORT IN THE JOURNAL OF GEOPHYSICAL RESEARCH, 67, 2231-2253, JUNE 1962. THE REPORT, WRITTEN BY THE PRINCIPAL INVESTIGATOR, CONSISTS OF 23 PAGES, 14 OF WHICH CONTAIN SOME TYPE OF REDUCED OR ANALYZED X-RAY AND LYMAN-ALPHA FLUX DATA. INCLUDED IN THE ABOVE ARE SIX PAGES OF TIME-ORDERED REDUCED X-RAY FLUXES IN TABULATED FORM ACCOMPANIED BY DATA ON ALL REPORTED FLARES AND OTHER ASSOCIATED SOLAR EVENTS. APPROXIMATELY 100 EVENTS (17 PERCENT OF THE TOTAL NUMBER OF READABLE SATELLITE RECORDS OBTAINED BETWEEN JUNE 22, 1960, AND NOVEMBER 1, 1960, DURING PERIODS WHEN THE SOLAR ASPECT ANGLE WAS LESS THAN 30 DEG) ARE LISTED. ONLY THOSE READINGS THAT HAD MEASURABLE FLUXES ARE INCLUDED. THERE ARE ALSO THREE PAGES OF GRAPHS DEPICTING THE SPIN PRECESSION HISTORY OF THE SR 1 SATELLITE, FOUR PAGES OF GRAPHS SHOWING VARIOUS KINDS OF ANALYZED DATA, AND ONE PAGE GIVING A SUMMARY OF THE MAJOR EVENTS OBSERVED. IN ADDITION, THERE ARE GRAPHS DEPICTING THE SPECTRAL SENSITIVITY OF THE LYMAN-ALPHA PHOTOMETER, THE X-RAY PHOTOMETER'S SPECTRAL RESPONSE CHARACTERISTIC, THE ANGULAR RESPONSE OF THE X-RAY PHOTOMETER, AND 1 DAY OF RAW TELEMETRY DATA FROM THE LYMAN-ALPHA AND X-RAY DETECTORS. THE QUALITY OF THE DATA IS GOOD.

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SPACECRAFT NAME- TIROS 2      NSSDC ID 60-016A  
OTHER NAMES- 1560 PI 1, A 2, 60-016A

LAUNCH DATE- 11/23/60      DATE LAST SCIENTIFIC DATA RECORDED- 09/27/61

AGENCY- NASA-OSSA      SPACECRAFT WEIGHT IN ORBIT- 136 KG

ORBIT TYPE- GEOCENTRIC      EPOCH- 11/27/60      ORBIT PERIOD- 98.27 MIN.  
APOGEE- 626. KM ALT      PERIGEE- 533. KM ALT      INCLINATION- 48.534 DEGREES

SPACECRAFT BRIEF DESCRIPTION

TIROS 2 (TELEVISION AND INFRARED OBSERVATION SATELLITE) WAS A

SPIN-STABILIZED METEOROLOGICAL SPACECRAFT DESIGNED TO TEST EXPERIMENTAL TELEVISION TECHNIQUES AND INFRARED EQUIPMENT. IT WAS LAUNCHED INTO A NEARLY CIRCULAR ORBIT OF 640 KM. THE SPACECRAFT PERFORMED NORMALLY UNTIL IT WAS ABANDONED ON DECEMBER 4, 1961, AFTER THE LAST EXPERIMENT FAILED.

EXPERIMENT NAME- SCANNING RADIOMETER

NSSDC ID 60-016A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- J.D. BARKSDALE, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 04/22/61

#### EXPERIMENT BRIEF DESCRIPTION

THE SCANNING RADIOMETER OF THE TIROS 2 METEOROLOGICAL SATELLITE MEASURED THE EMITTED AND REFLECTED RADIATION OF THE EARTH AND ITS ATMOSPHERE. THE RADIOMETER SCANNED THE EARTH AND SPACE AS THE SATELLITE SPUN ABOUT ITS AXIS. FIVE RADIOMETERS, USING BOLOMETER DETECTORS AND FILTERS TO LIMIT THE SPECTRAL RESPONSE, PROVIDED COMPREHENSIVE DATA BY MEASURING RADIATION INTENSITIES IN SELECTED PORTIONS OF THE INFRARED SPECTRUM. THE SPECTRAL BANDWIDTH OF EACH RADIOMETER (IN MICRONS) AND ITS ASSOCIATED PARAMETER ARE AS FOLLOWS -- CHANNEL 1, 6.0 TO 6.5 (WATER VAPOR ABSORPTION), CHANNEL 2, 8.0 TO 12.0 (ATMOSPHERIC WINDOW), CHANNEL 3, 0.2 TO 6.0 (REFLECTED SOLAR RADIATION), CHANNEL 4, 7.5 TO 30 (TERRESTRIAL RADIATION), AND CHANNEL 5, 0.55 TO 0.75 (RESPONSE OF TV SYSTEM). INITIALLY, ALL RADIOMETERS PERFORMED NORMALLY, BUT CHANNELS 1 AND 4 GRADUALLY DETERIORATED AND BY JANUARY 1961 WERE USELESS. THE SIGNAL TO NOISE RATIO OF CHANNELS 3 AND 5 WAS EXTREMELY LOW, AND OUTPUT WAS HIGHLY QUESTIONABLE. ALL DATA STOPPED AFTER APPROXIMATELY 1600 ORBITS, WHEN THE RADIOMETER CHOPPER MOTOR FAILED ON APRIL 22, 1961.

DATA SET NAME- FINAL METEOROLOGICAL RADIATION TAPES  
(FMRT)

NSSDC ID 60-016A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/23/60 TO 04/13/61

#### DATA SET BRIEF DESCRIPTION

THE 126 TIROS 2 FINAL METEOROLOGICAL RADIATION TAPES (FMRT) ARE THE PRODUCT OF AN IBM 7094 COMPUTER PROGRAM WHOSE INPUT IS THE ATTITUDE/ORBITAL DATA, DIGITIZED RADIATION DATA, AND THE TIROS RADIOMETER CALIBRATION PACKAGE. THE TAPES ALSO INCLUDE GEOGRAPHICAL LOCATIONS ASSOCIATED WITH THE RADIATION MEASUREMENTS, SOLAR EPHEMERIS, AND SATELLITE TEMPERATURE. THESE 7-TRACK, 200-BPI, BINARY TAPES CONTAIN THE ORIGINAL REDUCED DATA IN THEIR ENTIRETY. EACH TAPE CONTAINS APPROXIMATELY 1 DAY OF DATA (EIGHT ORBITS). THE EXACT FORMAT OF THE FMRT TAPES IS DESCRIBED IN THE 'TIROS II RADIATION DATA USERS' MANUAL.'

DATA SET NAME- CATALOG OF METEOROLOGICAL RADIATION DATA

NSSDC ID 60-016A-028

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/23/60 TO 04/13/61

DATA SET BRIEF DESCRIPTION

THE 'TIROS II RADIATION DATA CATALOG' (AUGUST 15, 1961) DESCRIBES THE MAPPING PROCEDURES THAT WERE EMPLOYED IN PROCESSING THE TIROS 2 SCANNING RADIOMETER FINAL METEOROLOGICAL RADIATION TAPES (FMRT) USING AUTOMATIC DATA PROCESSING EQUIPMENT. SAMPLE GRID PRINT MAPS OF THE FIRST 50 ORBITS, WHERE DATA WERE ACQUIRED OVER OR NEAR THE UNITED STATES, ARE PRESENTED. AN INDEX OF ALL EXISTING FMRT FOR TIROS 2 IS ALSO INCLUDED. THE INDEX IS DIVIDED INTO TWO SECTIONS. ONE SECTION CONTAINS INFORMATION CONCERNING THE ATTITUDE OF THE SATELLITE AND THE LOCATION OF THE SUBPOINT TRACK AS A FUNCTION OF TIME. THE SECOND SECTION GIVES THE TIME FOR WHICH RADIATION DATA ARE AVAILABLE ON THE FMRT. THE INDEX COVERAGE IS FROM NOVEMBER 23, 1960, TO APRIL 13, 1961. THIS DATA CATALOG WAS PUBLISHED BY THE STAFF MEMBERS OF THE AERONOMY AND METEOROLOGY DIVISION OF NASA-GSFC AND THE METEOROLOGICAL SATELLITE LABORATORY OF THE U.S. WEATHER BUREAU. IT SHOULD BE USED IN CONJUNCTION WITH THE 'TIROS II RADIATION DATA USERS' MANUAL' (AUGUST 15, 1961), PUBLISHED BY THE SAME GROUP. THIS DOCUMENT INCLUDES AN EXPLANATION OF THE CALIBRATION, PHYSICAL SIGNIFICANCE OF THE DATA, APPROXIMATIONS USED, THE FMRT FORMAT, AND ASSOCIATED INFORMATION.

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SPACECRAFT NAME- EXPLORER 10

NSSDC ID 61-010A

OTHER NAMES- P 14, 1961 KAPPA 1, 61-010A

LAUNCH DATE- 03/25/61

DATE LAST SCIENTIFIC DATA RECORDED- 03/27/61

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT-

36 KG

ORBIT TYPE- GEOCENTRIC

EPCC- 03/25/61

ORBIT PERIOD-

MIN.

APOGEE-290622. KM ALT

PERIGEE-

0. KM ALT

INCLINATION-

31 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 10 WAS A CYLINDRICAL, BATTERY-POWERED SPACECRAFT INSTRUMENTED WITH TWO FLUXGATE MAGNETOMETERS AND ONE RUBIDIUM VAPOR MAGNETOMETER EXTENDING FROM THE MAIN SPACECRAFT BODY. THE SATELLITE OBJECTIVE WAS TO INVESTIGATE THE MAGNETIC FIELDS AND PLASMA AS THE PROBE PASSED THROUGH THE EARTH'S MAGNETOSPHERE AND INTO CISLUNAR SPACE. THE SATELLITE WAS LAUNCHED INTO A HIGHLY ELLIPTICAL ORBIT. IT WAS SPIN STABILIZED WITH A SPIN PERIOD OF 0.548 SEC. THE DIRECTION OF ITS SPIN VECTOR WAS 71 DEG RIGHT ASCENSION AND MINUS 15 DEG DECLINATION. THE ONLY USEFUL DATA WERE TRANSMITTED REAL TIME FOR 52 HR ON THE ASCENDING PORTION OF THE FIRST ORBIT. THE DISTANCE FROM THE EARTH WHEN THE LAST BIT OF USEFUL INFORMATION WAS TRANSMITTED WAS 42.3 EARTH

RADII, AND THE LOCAL TIME AT THIS POINT WAS 2200 HR. ALL TRANSMISSION  
CEASED SEVERAL HOURS LATER.

EXPERIMENT NAME- PLASMA PROBE

NSSDC ID 61-010A-02

ORIGINAL EXPERIMENT INSTITUTION- MIT

INVESTIGATORS- H.S. BRIDGE, MIT , CAMBRIDGE, MASS.  
F. SCHERB, MIT , CAMBRIDGE, MASS.  
B. ROSSI, MIT , CAMBRIDGE, MASS.

DATE LAST USEFUL DATA RECORDED- 03/27/61

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A FARADAY CUP WITH FOUR GRIDS AND A COLLECTOR DESIGNED TO PROVIDE DATA ON THE DENSITY OF THE SOLAR PLASMA AND THE MAGNITUDE AND DIRECTION OF ITS BULK MOTION. PROTONS WERE MEASURED IN THE FOLLOWING ENERGY RANGES -- 0 TO 5, 0 TO 20, 0 TO 80, 0 TO 250, 0 TO 800, AND 0 TO 2300 EV. THE EXPERIMENT WAS MOUNTED ON THE SPACECRAFT SO THAT THE SYMMETRY AXIS OF THE PLASMA PROBE WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THE FARADAY CUP HAD ITS MAXIMUM RESPONSE TO PARTICLES COMING IN AT 0 DEG TO ITS SYMMETRY AXIS. THE RESPONSE FELL OFF RAPIDLY UNTIL THE INSTRUMENT HAD A ZERO RESPONSE TO PARTICLES COMING IN AT 63 DEG AND GREATER TO ITS NORMAL. THE EFFECTIVE AREA OF COLLECTION FOR NORMAL INCIDENCE WAS 28 SQ CM. THE INSTRUMENT HAD TWO OUTPUTS, A DC COMPONENT RELATED TO PHOTOELECTRIC EFFECTS AND THE PLASMA FLUX AND AN AC COMPONENT RELATED ONLY TO THE PLASMA FLUX. DURING EACH TELEMETRY SEQUENCE OF 148 SEC, 5 SEC WERE USED BY THE PLASMA PROBE. THESE 5-SEC INTERVALS, SUBCOMMUTATED BY AN INTERVAL PROGRAM, WERE USED TO TRANSMIT SEQUENTIALLY A MARKER SIGNAL, THE DC OUTPUT OF THE INSTRUMENT, AND THE AC OUTPUT OF THE EXPERIMENT AT ONE OF THE SIX MODULATING VOLTAGES. THUS, A COMPLETE PLASMA PROBE SEQUENCE, CONSISTING OF EIGHT TELEMETERING CYCLES, LASTED 19 MIN, 44 SEC. NO INFLIGHT CALIBRATION WAS PROVIDED, AND NO ONBOARD PROCESSING WAS DONE. BECAUSE OF THE LIMITED LIFETIME OF THE SPACECRAFT BATTERY, ONLY 52 HR OF DATA WERE ACQUIRED.

DATA SET NAME- REDUCED PLASMA DATA PLOTS ON MICROFILM

NSSDC ID 61-010A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/25/61 TO 03/27/61

DATA SET BRIEF DESCRIPTION

THESE REDUCED PLASMA DATA SUPPLIED BY THE EXPERIMENTER ARE AVAILABLE AS PLOTS ON THREE REELS OF 35-MM MICROFILM. THE ORDINATE ON EACH PLOT IS THE NUMBER OF THE 'TOOTH' IN WHICH THE TELEMETRY SIGNAL LAY. (THE PLASMA

TELEMETRY SIGNAL CONSISTED OF A FREQUENCY SHIFT WITH A MAXIMUM RANGE OF 2000 CPS. THE DATA WERE ANALYZED WITH A 1000-TOOTH COMB FILTER, THE TEETH BEING SEPARATED BY 2 CPS. A ZERO LEVEL MUST BE DECIDED UPON AND THE NUMBER MULTIPLIED BY 2 IN ORDER TO OBTAIN THE FREQUENCY SHIFT. A CALIBRATION CURVE IS AVAILABLE TO CONVERT FROM FREQUENCY SHIFT TO CURRENT INPUT TO THE AMPLIFIER.) THERE ARE TWO PLOTS FOR EVERY 5-SEC SEGMENT OF THE PLASMA DATA. EACH PLOT IS 2 SEC LONG, AND, TOGETHER, THE PLOTS REPRESENT THE BEST CONTINUOUS 4 SEC OF DATA OF THE 5-SEC SEGMENT. BEGINNING TRANSIENTS AND NOISE ARE OMITTED WHERE POSSIBLE. THERE ARE ABOUT 200 CURRENT SAMPLES ON EACH 2-SEC PLOT. AT THE BOTTOM OF EACH PLOT, ALONG WITH THE PLOT NUMBER, IS THE DATE, HOUR, MINUTE, AND SECOND OF THE FIRST POINT PLOTTED IN GRAPH 1 OF THE SET, I.E., GRAPH 2 STARTS AT 2 SEC AFTER THE TIME PRINTED. A LABEL IS INCLUDED TO INDICATE THE ENERGY LEVEL AT WHICH THE DATA WERE TAKEN. THE VERTICAL LINES ON EACH GRAPH MARK THE CLOSEST APPROACH OF THE PLASMA PROBE CUP NORMAL TO THE VEHICLE-SUN LINE. THIS APPROACH WAS DETERMINED BY USING THE OPTICAL ASPECT SENSOR AND THE SATELLITE SPIN PERIOD. THERE IS A 90 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

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SPACECRAFT NAME- EXPLORER 11 NSSDC ID 61-013A  
OTHER NAMES- 1961 NU 1, S 15, 61-013A

LAUNCH DATE- 04/27/61 DATE LAST SCIENTIFIC DATA RECORDED- 11/17/61

AGENCY- NASA-GSFC SPACECRAFT WEIGHT IN ORBIT- 37 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 04/27/61 ORBIT PERIOD- 108.1 MIN.  
APOGEE- 1786. KM ALT PERIGEE- 486. KM ALT INCLINATION- 28.9 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

EXPLORER 11 WAS LAUNCHED FOR THE PURPOSE OF MAPPING THE SOURCES OF HIGH-ENERGY GAMMA RAYS. THE SATELLITE WAS A SPIN-STABILIZED OCTAGONAL ALUMINUM BOX (30.5 BY 30.5 BY 58.5 CM) ON A CYLINDER (15.2 CM IN DIAMETER AND 52.2 CM LONG). TELEMETRY WAS PROVIDED IN REAL TIME BY TWO PM TRANSMITTERS SINCE THE ONBOARD TAPE RECORDER FAILED AT LAUNCH.

EXPERIMENT NAME- CRYSTAL SANDWICH/CERENKOV COUNTER NSSDC ID 61-013A-02

ORIGINAL EXPERIMENT INSTITUTION- MIT

INVESTIGATORS- G.P. GARMIRE, CAL TECH, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 11/12/61

#### EXPERIMENT BRIEF DESCRIPTION

THIS TELESCOPE WAS USED TO DETERMINE THE INTENSITY AND PITCH-ANGLE DISTRIBUTION OF GEOMAGNETICALLY TRAPPED PROTONS. (IT WAS ALSO USED TO

DETECT HIGH-ENERGY GAMMA RAYS IN ANOTHER EXPERIMENT CARRIED ON EXPLORER 11.) THE TELESCOPE CONSISTED OF AN ANTICOINCIDENCE PLASTIC SHIELD, LAYERS OF NAI AND CSI CRYSTALS, AND A CYLINDRICAL LUCITE CERENKOV DETECTOR. WHEN THE ANTICOINCIDENCE REQUIREMENT OF THE PLASTIC SCINTILLATOR SHIELD WAS REMOVED, CHARGED PARTICLE INFORMATION WAS RECORDED BY ALL THREE COUNTERS. IN ADDITION, CHARGED PARTICLE COINCIDENCES BETWEEN THE CRYSTAL SANDWICH AND CERENKOV DETECTORS WERE RECORDED. IN THIS MODE, DIRECTIONAL INFORMATION WAS OBTAINED. THE SOLID-ANGLE-AREA FACTOR OF THE TELESCOPE WAS ABOUT 4.3 SQ CM STER. THE LOOK DIRECTION OF THE TELESCOPE WAS IDENTICAL TO THE SYMMETRY AXIS OF THE SPACECRAFT. FOR A BEAM INCIDENT PARALLEL TO THE LOOK DIRECTION OF THE TELESCOPE, THE DETECTION EFFICIENCY FELL TO ZERO AT 15 DEG FROM THIS DIRECTION. THE ENERGY THRESHOLDS FOR EACH DETECTOR WERE AS FOLLOWS -- (1) SCINTILLATION PLASTIC (UPPER PORTION), ELECTRONS - 350 KEV, PROTONS - 3.5 MEV, (2) SCINTILLATION PLASTIC (LOWER PORTION), ELECTRONS - 400 KEV, PROTONS - 35 MEV, (3) CRYSTAL SANDWICH, ELECTRONS - 400 KEV, PROTONS - 75 MEV, AND (4) CERENKOV, ELECTRONS - 15 MEV, PROTONS - 350 MEV. THE ACCUMULATION TIME FOR THE CHARGED PARTICLE DATA WAS APPROXIMATELY 30 SEC. A SINGLE SCALING CIRCUIT IN EXPLORER 11 PERMITTED ONE CHANNEL AT A TIME TO BE MONITORED. DURING THE 7 MONTHS IN WHICH THE INSTRUMENT WAS TURNED ON AND WORKING IN ORBIT, ONLY 141 HR (3 PERCENT) WERE CONSIDERED USEFUL OBSERVING TIME. DURING THIS TIME, THE TELESCOPE WAS MONITORED FOR GAMMA RAYS AND CHARGED PARTICLES.

DATA SET NAME- DETECTOR COUNT RATES ON MAGNETIC TAPE

NSSDC ID 61-013A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/28/61 TO 11/12/61

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA ARE AVAILABLE ON ONE 7-TRACK, BCD, CARD IMAGE MAGNETIC TAPE WRITTEN ON AN IBM 7094 AT A DENSITY OF 556 BPI. THIS TAPE WAS GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE FOLLOWING ITEMS ARE CONTAINED ON THE TAPE -- CHANNEL (DETECTOR), LATITUDE, LONGITUDE, ALTITUDE, B, L, B/BO, TIME, AND UNCALIBRATED COUNT RATE. THERE IS LESS THAN A 5 PERCENT DATA COVERAGE FOR THE TIME PERIOD INDICATED.

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SPACECRAFT NAME- INJUN 1

NSSDC ID 61-015B

OTHER NAMES- 1561 OMICRON 2, 61-015B

LAUNCH DATE- 06/29/61

DATE LAST SCIENTIFIC DATA RECORDED- 03/06/63

AGENCY- IDWA-NRL

SPACECRAFT WEIGHT IN ORBIT-

16 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 06/29/61

ORBIT PERIOD- 103.9 MIN.

APOGEE- 999. KM ALT

PERIGEE- 882. KM ALT

INCLINATION- 66.82 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE SATELLITE INJUN 1 WAS THE FIRST OF A SERIES OF SPACECRAFT DESIGNED AND

BUILT BY THE UNIVERSITY OF IOWA TO STUDY THE NATURAL AND ARTIFICIAL TRAPPED RADIATION BELTS, AURORAE AND AIRGLOW, AND OTHER GEOPHYSICAL PHENOMENA. INJUN 1 WAS LAUNCHED SIMULTANEOUSLY WITH TRANSIT 4A AND GREB 3. TRANSIT 4A SUCCESSFULLY SEPARATED FROM INJUN 1, BUT GREB 3 DID NOT. INJUN 1 WAS DESIGNED TO BE MAGNETICALLY ALIGNED. HOWEVER, DUE TO THE PRESENCE OF GREB 3 (WHICH BLOCKED THE VIEW OF THE PHOTOMETER), IT WAS IMPOSSIBLE TO KEEP THE SATELLITE CONSTANTLY ORIENTED ON THE TERRESTRIAL MAGNETIC FIELD THROUGHOUT AN ORBIT. A SINGLE AXIS FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. INJUN 1 HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES. THE SATELLITE SENT RADIATION DATA UNTIL MARCH 6, 1963, AND IS EXPECTED TO BE IN ORBIT FOR ABOUT 900 YR.

EXPERIMENT NAME- GM COUNTER

NSSDC ID 61-015B-01

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- L.A. FRANK, U OF IOWA , IOWA CITY, IOWA  
J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 08/31/62

#### EXPERIMENT BRIEF DESCRIPTION

AN ANTON TYPE 213 DIRECTIONAL GEIGER TUBE DETECTOR WAS USED TO DETECT SOLAR X RAYS IN THE 2- TO 12-A RANGE, ELECTRONS (E.GE. 40 KEV), AND PROTONS (E.GE. 0.5 MEV). THE DETECTOR WAS SAMPLED EVERY SECOND, AND THE ACCUMULATION TIME FOR THE DETECTOR WAS 61/64 SEC. (THE SPACECRAFT HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH A POORLY DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES.) THE SOFT X-RAY OBSERVATIONS WERE MADE AT SPORADIC INTERVALS FROM JUNE 29, 1961, THROUGH AUGUST 12, 1962 (ABOUT 74 MIN OF DATA). THE EXPERIMENT PERFORMED NOMINALLY THROUGHOUT THE LIFE OF THE SPACECRAFT.

DATA SET NAME- TABULATION OF 2- TO 12-A SOLAR X-RAY DATA

NSSDC ID 61-015B-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/29/61 TO 08/12/62

#### DATA SET BRIEF DESCRIPTION

THIS IS A REDUCED DATA SET ON ONE SHEET OF PAPER IN THE FORM OF A TABLE OF GM TUBE COUNTING RATES (IN CPS) DUE TO SOLAR X RAYS IN THE 2- TO 12-A RANGE, DATE (MONTH, DAY, YR), AND TIME (UT) CHRONOLOGICALLY ORDERED. THE X-RAY COUNTING RATES WERE DISTINGUISHED FROM PARTICLE COUNTING RATES BY OBSERVING WHEN THE CDS OPTICAL MONITOR DETECTOR (NSSDC EXPERIMENT NUMBER 61-015B-02) POINTED TOWARD THE SUN. THIS LATTER DETECTOR WAS ALIGNED PARALLEL TO THE GM TUBE. DATA ARE AVAILABLE FROM JUNE 29, 1961, TO AUGUST

12. 1962.

DATA SET NAME- MASTER TAPE, GM COUNTS

NSSDC ID 61-0158-018

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/30/61 TO 08/31/62

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 204 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/BO. THIS SET OF TAPES INCLUDES DATA SETS 61-0158-018, -02A, -03A, -05A, AND -06A.

EXPERIMENT NAME- CADMIUM SULFIDE DETECTOR

NSSDC ID 61-0158-02

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.W. FREEMAN, RICE U , HOUSTON, TEXAS  
B.J. O'BRIEN, U OF SYDNEY , SYDNEY, AUSTRALIA

DATE LAST USEFUL DATA RECORDED- 08/31/62

EXPERIMENT BRIEF DESCRIPTION

A SET OF FIVE DIRECTIONAL CDS CRYSTAL ENERGY FLUX DETECTORS WAS USED TO STUDY THE FLUX OF LOW-ENERGY PROTONS AND IONS TRAPPED IN THE INNER RADIATION BELT. TWO OF THE DETECTORS (CDS TOTAL ENERGY DETECTORS ORIENTED AT 90 AND 180 DEG WITH RESPECT TO THE SATELLITE SYMMETRY AXIS) HAD NO PHYSICAL OBSTRUCTION BETWEEN SPACE AND THE CRYSTAL AND WERE SENSITIVE TO ELECTRONS (200 EV TO 500 KEV) AND PROTONS (1 KEV TO 10 MEV). THE SECOND TWO CDS DETECTORS (CDS PROTON ENERGY DETECTORS ORIENTED AT 90 AND 180 DEG WITH RESPECT TO THE SATELLITE SYMMETRY AXIS) WERE IDENTICAL TO THE TOTAL ENERGY DETECTORS BUT INCLUDED SMALL BROOM MAGNETS THAT SWEEPED ELECTRONS WITH E.L.T. 500 KEV FROM THE BEAM INCIDENT ON THE CRYSTAL. THE MAGNETS PROVIDED A FIELD OF 500 GAUSS AND SUBTENDED A SOLID ANGLE OF 0.5 STER AT THE CRYSTAL. THE FIFTH CDS DETECTOR (OPTICAL MONITOR ORIENTED AT 90 DEG WITH RESPECT TO THE SATELLITE SYMMETRY AXIS) WAS GEOMETRICALLY IDENTICAL TO THE OTHER FOUR BUT WAS, IN ADDITION, FITTED WITH A 0.5 GM/CM SQ TRANSPARENT QUARTZ WINDOW AND HENCE SERVED AS A LIGHT AND X-RAY DETECTOR. ALL FIVE DETECTORS HAD DIRECT CURRENT OUTPUTS PROPORTIONAL TO THE INCIDENT CHARGED CORPUSCULAR ENERGY FLUX. THE DETECTORS WERE SAMPLED AT LEAST ONCE EVERY SECOND, AND THE



DETECTOR ACCUMULATION TIMES RANGED FROM 9/64 TO 61/64 SEC. (THE SPACECRAFT HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES.) THE EXPERIMENT PERFORMED NCMINALLY THROUGHOUT THE LIFETIME OF THE SPACECRAFT.

DATA SET NAME- MASTER TAPE, CDS COUNTS

NSSDC ID 61-015B-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/30/61 TO 08/31/62

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 204 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/B0. THIS SET OF TAPES INCLUDES DATA SETS 61-015B-01B, -02A, -03A, -05A, AND -06A.

EXPERIMENT NAME- ELECTRON DIFFERENTIAL ENERGY  
SPECTROMETER

NSSDC ID 61-015B-03

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- C.D. LAUGHLIN, MCDONALD OBSERVATORY , FT. DAVIS, TEXAS

DATE LAST USEFUL DATA RECORDED- 08/31/62

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY AURORAL AND RADIATION ZONE PHENOMENA USING THREE END-WINDOW TYPE 213 DIRECTIONAL GM COUNTERS. SMALL MAGNETS WERE USED TO FOCUS ELECTRONS WITH ENERGIES BETWEEN 40 AND 50 KEV INTO ONE OF THE GM COUNTERS AND ELECTRONS WITH ENERGIES BETWEEN 90 AND 100 KEV INTO ANOTHER COUNTER. THE THIRD GM COUNTER SERVED AS A MONITOR OF PENETRATING X RAYS AND ENERGETIC PROTONS. THE DETECTOR ACCUMULATORS WERE SAMPLED ONCE PER SECOND, AND THE ACCUMULATION TIME FOR EACH DETECTOR WAS 61/64 SEC. (THE SPACECRAFT HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES.) THE EXPERIMENT PERFORMED NCMINALLY THROUGHOUT THE LIFETIME OF THE SPACECRAFT.

DATA SET NAME- MASTER TAPE, ELECTRON COUNTS

NSSDC ID 61-015B-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/30/61 TO 08/31/62

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 204 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/BO. THIS SET OF TAPES INCLUDES DATA SETS 61-015B-01B, -02A, -03A, -05A, AND -06A.

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID 61-015B-05

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 08/31/62

EXPERIMENT BRIEF DESCRIPTION

THIS DETECTOR CONSISTED OF A ONE-AXIS FLUXGATE MAGNETOMETER THAT WAS INTENDED TO CHECK THE MAGNETIC FIELD ALIGNMENT OF INJUN 1 AND TO DETERMINE THE LOOK DIRECTIONS OF THE VARIOUS DETECTORS. THE MAGNETOMETER, MOUNTED IN A POINTING DIRECTION NORMAL TO THE MAGNETIC FIELD VECTOR, HAD A RANGE OF 0 TO 0.5 GAUSS. MEASUREMENTS WERE MADE AT THE RATE OF ONE PER SECOND, WITH EACH FOURTH MEASUREMENT BEING USED AS A CALIBRATION CHECK. THE MAGNETOMETER PERFORMED NORMALLY THROUGHOUT THE LIFETIME OF INJUN 1.

DATA SET NAME- MASTER TAPE, MONITOR MAGNETOMETER DATA

NSSDC ID 61-015B-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/30/61 TO 08/31/62

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1. THE REDUCED DATA ARE CONTAINED ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC

TAPES WRITTEN AT 800 BPI WITH 34 WORDS PER LOGICAL RECCRD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE MAGNETOMETER DATA OCCUPIES THREE BITS (ONE-HALF WORD) OF WORD 18 AND IS EXPRESSED IN THE UNIT COUNTS PER SECOND. A CONVERSION FACTOR FROM COUNTS PER SECOND TO GAUSS HAS BEEN PROVIDED BY THE EXPERIMENTER. ALSO INCLUDED ON THESE TAPES ARE DATA FROM THE OTHER INJUN 1 DETECTORS (EXCEPT FOR THE NRL X-RAY EXPERIMENT), AS WELL AS EPHEMERIS DATA INCLUDING UT, LOCAL TIME, LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN L PARAMETER, AND B/BO. THIS SET OF TAPES IS REFERENCED AS DATA SETS 61-015B-01B, -02A, -03A, -05A, AND -06A.

EXPERIMENT NAME- SOLID-STATE PROTON DETECTOR

NSSDC ID 61-015B-06

ORIGINAL EXPERIMENT INSTITUTION- APPLIED PHYSICS LAB

INVESTIGATORS- C.O. BOSTROM, APPLIED PHYSICS LAB , SILVER SPRING, MD.  
A.J. ZMUDA, APPLIED PHYSICS LAB , SILVER SPRING, MD.  
G.F. PIEPER, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 07/09/62

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF FOUR SILICON P-N JUNCTION DETECTORS. TWO DETECTORS MOUNTED PERPENDICULAR WITH RESPECT TO EACH OTHER MEASURED DIRECTIONAL FLUXES OF PROTONS IN THE ENERGY RANGES 1.4 TO 17 MEV AND 1.6 TO 11 MEV, RESPECTIVELY. THE REMAINING TWO DETECTORS SERVED AS BACKGROUND DETECTORS. THE DETECTORS WERE INSENSITIVE TO NATURALLY OCCURRING ELECTRONS. COUNTS IN EACH DETECTOR WERE ACCUMULATED FOR ALMOST A FULL SECOND AND WERE TELEMETERED EVERY SECOND. THE DETECTORS WORKED WELL UNTIL JULY 9, 1962, AFTER WHICH STARFISH ELECTRONS CONTAMINATED THE DATA. LOSS OF THE INTENDED MAGNETIC ALIGNMENT RENDERED THE DATA USELESS FOR DETAILED PITCH ANGLE STUDIES.

DATA SET NAME- MASTER TAPE, P-N COUNTS

NSSDC ID 61-015B-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/30/61 TO 08/31/62

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 34 WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- UT AND LOCAL TIME, LONGITUDE,

LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/BO. THIS SET OF TAPES IS REFERENCED AS DATA SETS 61-015B-01B, -02A, -03A, -05A, AND -06A.

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SPACECRAFT NAME- TIROS 3  
OTHER NAMES- 1561 RHO 1, A 3, 61-017A,

NSSDC ID 61-017A

LAUNCH DATE- 07/12/61 DATE LAST SCIENTIFIC DATA RECORDED- 02/27/62

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 129 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 07/12/61 ORBIT PERIOD- 100.4 MIN.  
APOGEE- 702. KM ALT PERIGEE- 631. KM ALT INCLINATION- 47.898 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

TIROS 3 (TELEVISION AND INFRARED OBSERVATION SATELLITE) WAS A SPIN-STABILIZED METEOROLOGICAL SPACECRAFT DESIGNED TO TEST EXPERIMENTAL TELEVISION AND INFRARED EQUIPMENT. IT WAS LAUNCHED INTO A NEARLY CIRCULAR ORBIT OF 770 KM. THE SPACECRAFT PERFORMED NORMALLY UNTIL NOVEMBER 30, 1961, AND SPORADICALLY UNTIL FEBRUARY 27, 1962. IT WAS ABANDONED ON FEBRUARY 28, 1962.

EXPERIMENT NAME- LOW-RESOLUTION OMNIDIRECTIONAL  
RADIOMETER

NSSDC ID 61-017A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

INVESTIGATORS- V.E. SUOMI, U OF WISCONSIN, MADISON, WIS.

DATE LAST USEFUL DATA RECORDED- 10/20/61

#### EXPERIMENT BRIEF DESCRIPTION

THE TIROS 3 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER CONSISTED PRIMARILY OF TWO SETS OF BOLOMETERS IN THE FORM OF HOLLOW ALUMINUM HEMISPHERES MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT. THE BOLOMETERS WERE THERMALLY ISOLATED FROM BUT IN CLOSE PROXIMITY TO REFLECTING MIRRORS SO THAT THE HEMISPHERES BEHAVED VERY MUCH LIKE ISOLATED SPHERES IN SPACE. THE EXPERIMENT WAS DESIGNED TO MEASURE THE AMOUNT OF SOLAR ENERGY ABSORBED, REFLECTED, AND EMITTED BY THE EARTH AND ITS ATMOSPHERE. ONE BOLOMETER IN EACH SET WAS PAINTED BLACK, AND ONE WAS PAINTED WHITE. THE BLACK BOLOMETER ABSORBED MOST OF THE INCIDENT RADIATION WHILE THE WHITE BOLOMETER WAS SENSITIVE MAINLY TO RADIATION WITH WAVELENGTHS LONGER THAN APPROXIMATELY 4 MICRONS. REFLECTED AND EMITTED RADIATION CAN THUS BE SEPARATED. THE SENSOR TEMPERATURES WERE MEASURED BY THERMISTORS FASTENED TO THE INSIDE OF THE HOLLOW HEMISPHERES. THE SENSOR TEMPERATURES, TAKEN EVERY 29 SEC, WERE AN AVERAGE OF TWO TEMPERATURES FROM THE MATCHED THERMISTORS. THE EXPERIMENT WAS A SUCCESS, AND USABLE DATA WERE RECEIVED FROM JULY 12, 1961, TO OCTOBER

20, 1961. IDENTICAL EXPERIMENTS WERE FLOWN ON TIROS 4 AND 7, AND A SIMILAR ONE WAS CARRIED ON EXPLORER 7.

DATA SET NAME- LOW-RESOLUTION OMNIDIRECTIONAL  
RADIOMETER TEMPERATURE TAPES

NSSDC ID 61-017A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/12/61 TO 10/20/61

DATA SET BRIEF DESCRIPTION

THE TIROS 3 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER DATA ARE AVAILABLE ON FIVE MAGNETIC TAPES PRODUCED ON AN IBM 7094 COMPUTER. THESE 7-TRACK, 556-BPI, BCD TAPES CONTAIN BOTH THE BLACK AND WHITE SENSOR TEMPERATURE VALUES OBTAINED FROM THE HEMISPHERIC BOLMETERS. EACH TEMPERATURE VALUE IS LOCATED WITH RESPECT TO TIME, LATITUDE, AND LONGITUDE.

EXPERIMENT NAME- SCANNING RADIOMETER

NSSDC ID 61-017A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- R.M. RADOS, NASA-GSFC , GREENBELT, MD.  
P. HEIL, NASA-GSFC , GREENBELT, MD.  
J.D. BARKSDALE, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 10/01/61

EXPERIMENT BRIEF DESCRIPTION

THE SCANNING RADIOMETER OF THE TIROS 3 METEOROLOGICAL SATELLITE MEASURED THE EMITTED AND REFLECTED RADIATION OF THE EARTH AND ITS ATMOSPHERE. THE RADIOMETER SCANNED THE EARTH AND SPACE AS THE SATELLITE SPUN ABOUT ITS AXIS. FIVE RADIOMETERS, USING BOLOMETER DETECTORS AND FILTERS TO LIMIT THE SPECTRAL RESPONSE, PROVIDED COMPREHENSIVE DATA BY MEASURING RADIATION INTENSITIES IN SELECTED PORTIONS OF THE INFRARED SPECTRUM. THE SPECTRAL BANDWIDTH OF EACH RADIOMETER (IN MICRONS) AND ITS ASSOCIATED PARAMETER ARE AS FOLLOWS -- CHANNEL 1, 6.0 TO 6.5 (WATER VAPOR ABSORPTION), CHANNEL 2, 8.0 TO 12.0 (ATMOSPHERIC WINDOW), CHANNEL 3, 0.2 TO 6.0 (REFLECTED SOLAR RADIATION), CHANNEL 4, 7.5 TO 30 (TERRESTRIAL RADIATION), AND CHANNEL 5, 0.55 TO 0.75 (RESPONSE OF TV SYSTEM). RESPONSE CHARACTERISTICS OF ALL CHANNELS DEGRADED RAPIDLY AFTER LAUNCH. THE GREATEST UNCERTAINTY IN THE RADIATION MEASUREMENTS IS DUE TO THE APPARENT SHIFT IN THE ZERO RADIATION LEVEL. DATA ARE USABLE FOR CHANNELS 1, 2, 3, 4, AND 5 UP TO ORBITS 118, 875, 875, 130, AND 300, RESPECTIVELY.

DATA SET NAME- FINAL METEOROLOGICAL RADIATION TAPES  
(FMRT)

NSSDC ID 61-017A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/12/61 TO 10/01/61

DATA SET BRIEF DESCRIPTION

THE 74 TIROS 3 FINAL METEOROLOGICAL RADIATION TAPES (FMRT) ARE THE PRODUCT OF AN IBM 7094 COMPUTER PROGRAM WHOSE INPUT IS THE ATTITUDE/ORBITAL DATA, DIGITIZED RADIATION DATA, AND THE TIROS RADIOMETER CALIBRATION PACKAGE. THE TAPES ALSO INCLUDE GEOGRAPHICAL LOCATIONS ASSOCIATED WITH THE RADIATION MEASUREMENTS, SOLAR EPHEMERIS, AND SATELLITE TEMPERATURE. THESE 7-TRACK, 200-BPI, BINARY TAPES CONTAIN THE ORIGINAL REDUCED DATA IN THEIR ENTIRETY. EACH TAPE CONTAINS APPROXIMATELY 1 DAY OF DATA (EIGHT ORBITS). DATA ARE AVAILABLE FROM JULY 12, 1961, TO OCTOBER 1, 1961. THE EXACT FORMAT OF THE FMRT TAPES IS DESCRIBED IN THE 'TIROS III RADIATION DATA USERS' MANUAL' AND ITS SUPPLEMENT.

DATA SET NAME- CATALOG OF METEOROLOGICAL RADIATION DATA

NSSDC ID 61-017A-03B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 07/12/61 TO 09/30/61

DATA SET BRIEF DESCRIPTION

THE 'TIROS III RADIATION DATA CATALOG' DESCRIBES THE MAPPING PROCEDURES THAT WERE EMPLOYED IN PROCESSING THE TIROS 3 SCANNING RADIOMETER FINAL METEOROLOGICAL RADIATION TAPES (FMRT) USING AUTOMATIC DATA PROCESSING EQUIPMENT. RADIATION GRID PRINT MAPS ARE PRESENTED FOR FIVE CASE STUDIES. AN INDEX OF ALL EXISTING FMRT FOR TIROS 3 IS INCLUDED. THE INDEX IS DIVIDED INTO TWO SECTIONS. ONE SECTION CONTAINS INFORMATION CONCERNING THE ATTITUDE OF THE SATELLITE AND THE LOCATION OF THE SUBPOINT TRACK AS A FUNCTION OF TIME. THE SECOND SECTION GIVES THE TIME FOR WHICH RADIATION DATA ARE AVAILABLE ON THE FMRT. THE INDEX AVERAGE IS FROM JULY 12, 1961, TO SEPTEMBER 30, 1961. THIS DATA CATALOG WAS PUBLISHED BY THE STAFF MEMBERS OF THE AERONOMY AND METEOROLOGY DIVISION OF NASA-GSFC AND THE METEOROLOGICAL SATELLITE LABORATORY OF THE U.S. WEATHER BUREAU (DECEMBER 15, 1962). IT SHOULD BE USED IN CONJUNCTION WITH THE 'TIROS III RADIATION DATA USERS' MANUAL' (AUGUST 1962), WHICH WAS PUBLISHED BY THE SAME GROUP. THIS DOCUMENT INCLUDES AN EXPLANATION OF THE CALIBRATION, PHYSICAL SIGNIFICANCE OF THE DATA, APPROXIMATIONS USED, THE FMRT FORMAT, AND ASSOCIATED INFORMATION.

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SPACECRAFT NAME- EXPLORER 12

NSSDC ID 61-020A

OTHER NAMES- 1961 UPSILON 1, EPE A. S 3, 61-020A

LAUNCH DATE- 08/16/61

DATE LAST SCIENTIFIC DATA RECORDED- 12/06/61

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT- 37.7 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 08/16/61 ORBIT PERIOD- 1590 MIN.

APOGEE- 77250. KM ALT

PERIGEE- 293. KM ALT INCLINATION- 33 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

EXPLORER 12 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE COSMIC-RAY PARTICLES, TRAPPED PARTICLES, SOLAR WIND PROTONS, AND MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC FIELDS. IT WAS THE FIRST OF THE S 3 SERIES OF SPACECRAFT, WHICH ALSO INCLUDED EXPLORERS 14, 15, AND 26. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.324 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHER CHANNELS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT FUNCTIONED WELL UNTIL DECEMBER 6, 1961, WHEN IT CEASED TRANSMITTING DATA APPARENTLY AS A RESULT OF FAILURES IN THE POWER SYSTEM. GOOD DATA WERE RECORDED FOR APPROXIMATELY 90 PERCENT OF THE ACTIVE LIFETIME OF THE SPACECRAFT. THE INITIAL SPIN RATE WAS 28.0 RPM, AND THE SPIN AXIS DIRECTION WAS RIGHT ASCENSION 48 DEG, DECLINATION -28 DEG. THE DIRECTION WAS NEARLY CONSTANT WITH TIME, AND THE SPIN RATE SLOWLY INCREASED WITH TIME TO 34.3 RPM. APOGEE DIRECTION VARIED FROM ABOUT 1200 TO 0600 LOCAL TIME.

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID 61-020A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF NEW HAMPSHIRE

INVESTIGATORS- L.J. CAHILL, JR., U OF MINNESOTA, MINNEAPOLIS, MINN.

DATE LAST USEFUL DATA RECORDED- 12/06/61

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE MAGNITUDE AND DIRECTION OF THE EARTH'S MAGNETIC FIELD BETWEEN 3 AND 13 EARTH RADII. IT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETOMETERS MOUNTED ON THE END OF AN 86.4-CM BOOM. ONE MAGNETOMETER AXIS WAS WITHIN 2 DEG OF THE SPACECRAFT SPIN AXIS. EACH OF THE THREE SENSORS HAD A RANGE OF -1000 TO +1000 GAMMAS WITH A SENSITIVITY OF 1 GAMMA. THE THREE COMPONENTS OF THE MAGNETIC FIELD WERE ALL MEASURED WITHIN A 50-MSEC TIME PERIOD ONCE EVERY 327 MSEC. AN INFLIGHT CALIBRATION SYSTEM APPLIED A KNOWN MAGNETIC FIELD TO EACH SENSOR IN TURN ONCE EVERY 115 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH DECEMBER 6, 1961.

DATA SET NAME- TEN-SEC AVERAGED MAGNETIC FIELD  
COMPONENTS ON TAPE

NSSDC ID 61-020A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/16/61 TO 12/05/61

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE 7-TRACK, BCD, 556-BPI TAPES, WRITTEN ON AN IBM 1620 SYSTEM, THAT WERE SUBMITTED BY THE EXPERIMENTER. EACH LOGICAL RECORD CONSISTS OF 72 CHARACTERS AND INCLUDES SIX MAGNETIC FIELD ITEMS AND FOUR TIME INFORMATION ITEMS. THE SIX MAGNETIC FIELD VALUES, DERIVED FROM THE ORTHOGONAL COMPONENT MEASUREMENTS, ARE THE FIELD MAGNITUDE AND ITS STANDARD DEVIATION, THE POLAR ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE SPIN AXIS) AND ITS STANDARD DEVIATION, AND THE AZIMUTHAL ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE MERIDIAN PLANE PASSING THROUGH THE SUN) AND ITS STANDARD DEVIATION. EACH OF THE FIELD VALUES IS A 10-SEC AVERAGE, AND THESE ARE PRESENTED EVERY 5 MIN. THE TIME INFORMATION ITEMS ARE THE DAY NUMBER, HR, MIN, AND MSEC OF THE MIDPOINT OF THE 10-SEC AVERAGE. THESE DATA, WHICH ARE TIME ORDERED, CONTAIN NO EPHEMERIS INFORMATION AND COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM AUGUST 16, 1961, TO DECEMBER 5, 1961. MANY OF THE DATA GAPS ARE DUE TO PERIGEE PASSING (MAGNITUDE OF THE MAGNETIC FIELD IS GREATER THAN 1000 GAMMAS), AND THESE OCCUR WITH A PERIOD OF APPROXIMATELY 26.6 HR.

DATA SET NAME- PLOTS OF 10-SEC AVERAGED MAGNETIC FIELD  
COMPONENTS ON MICROFILM

NSSDC ID 61-020A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/16/61 TO 12/05/61

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM THE DATA PRESENTED IN 61-020A-02A. EACH FRAME PRESENTS, FROM TOP TO BOTTOM, PLOTS OF THE AZIMUTHAL ANGLE OF THE FIELD VECTOR MEASURED RELATIVE TO THE SATELLITE MERIDIAN PLANE PASSING THROUGH THE SUN, THE POLAR ANGLE OF THE FIELD VECTOR MEASURED RELATIVE TO THE SATELLITE SPIN AXIS, AND THE FIELD MAGNITUDE. EACH DATA POINT IS A 10-SEC AVERAGE COMPUTED AND PLOTTED ONCE EVERY 5 MIN. EACH FRAME CONTAINS 24 HR OF DATA. THESE DATA, WHICH ARE TIME ORDERED, CONTAIN NO EPHEMERIS INFORMATION AND COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM AUGUST 16, 1961, TO DECEMBER 5, 1961. MANY OF THE GAPS ARE DUE TO PERIGEE PASSING (MAGNITUDE OF THE MAGNETIC FIELD IS GREATER THAN 1000 GAMMAS), AND THESE OCCUR WITH A PERIOD OF APPROXIMATELY 26.6 HR.



DATA SET NAME- TEN-SEC AVERAGED MAGNETIC FIELD AND  
EPHEMERIS INFORMATION ON TAPE

NSSDC ID 61-020A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/16/61 TO 12/05/61

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, BCD, 556-BPI, UNBLOCKED TAPE THAT WAS GENERATED AT NSSDC BY MERGING THE DATA IN DATA SET 61-020A-02A WITH EPHEMERIS INFORMATION AND CERTAIN ELEMENTS OF THE 1961 JENSEN AND CAIN GEOMAGNETIC FIELD MODEL. EACH LOGICAL RECORD, CONSISTING OF 120 CHARACTERS, INCLUDES SIX MEASURED MAGNETIC FIELD ITEMS, FOUR TIME INFORMATION ITEMS, EIGHT EPHEMERIS INFORMATION ITEMS, FIVE MODEL GEOMAGNETIC FIELD ITEMS, AND TWO ITEMS THAT REFER BACK TO THE DATA IN DATA SET 61-020A-02A. THE SIX MEASURED MAGNETIC FIELD VALUES DERIVED FROM THE ORTHOGONAL COMPONENT MEASUREMENTS ARE THE FIELD MAGNITUDE AND ITS STANDARD DEVIATION, THE POLAR ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE SPIN AXIS) AND ITS STANDARD DEVIATION, AND THE AZIMUTHAL ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE MERIDIAN PLANE PASSING THROUGH THE SUN) AND ITS STANDARD DEVIATION. EACH OF THE FIELD VALUES IS A 10-SEC AVERAGE, AND THESE ARE PRESENTED ONCE EVERY 5 MIN. THE TIME INFORMATION ITEMS ARE THE DAY NUMBER, HR, MIN, AND MSEC OF THE MIDPOINT OF THE 10-SEC AVERAGE. THE EPHEMERIS INFORMATION ITEMS ARE THE ORBIT NUMBER, LONGITUDE, LATITUDE, GEOCENTRIC RANGE, RIGHT ASCENSION, MCILWAIN L PARAMETER, AND THE SUN'S RIGHT ASCENSION AND DECLINATION. THE MODEL FIELD ITEMS INCLUDE THE FIELD MAGNITUDE, RIGHT ASCENSION, DECLINATION, AND POLAR AND AZIMUTHAL ANGLES. THESE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM AUGUST 16, 1961, TO DECEMBER 5, 1961. MANY OF THE DATA GAPS ARE DUE TO PERIGEE PASSING (MAGNITUDE OF THE MAGNETIC FIELD IS GREATER THAN 1000 GAMMAS), AND THESE OCCUR WITH A PERIOD OF APPROXIMATELY 26.6 HR.

EXPERIMENT NAME- CHARGED PARTICLES

NSSDC ID 61-020A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA  
L.A. FRANK, U OF IOWA , IOWA CITY, IOWA  
B.J. O'BRIEN, U OF SYDNEY , SYDNEY, AUSTRALIA  
C.D. LAUGHLIN, MCDONALD OBSERVATORY , FT. DAVIS, TEXAS  
J.W. FREEMAN, RICE U. , HOUSTON, TEXAS

DATE LAST USEFUL DATA RECORDED- 12/06/61

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO MEASURE THE FLUX AND ENERGY SPECTRUM OF

CHARGED PARTICLES AND COSMIC RAYS AND TO DETERMINE THEIR SPATIAL AND TEMPORAL DISTRIBUTION OVER THE SPACECRAFT ORBIT. THE DETECTORS INCLUDED (1) A SHIELDED ANTON TYPE 302 OMNIDIRECTIONAL GEIGER-MUELLER TUBE, WHICH DETECTED PROTONS E.G.T. 23 MEV AND ELECTRONS E.G.E. 1.6 MEV, (2) AN ELECTRON MAGNETIC SPECTROMETER UTILIZING THREE THIN-WINDOWED ANTON TYPE 213 DIRECTIONAL GEIGER-MUELLER TUBES SENSITIVE TO ELECTRONS WITH ENERGIES FROM 40 TO 100 KEV, AND (3) THREE DIRECTIONAL CADMIUM SULFIDE CRYSTALS FOR MEASUREMENTS OF THE TOTAL FLUX OF PROTONS WITH ENERGIES FROM 1 KEV TO 10 MEV AND ELECTRONS WITH ENERGIES FROM 200 EV TO 500 KEV. ALL DIRECTIONAL DETECTORS WERE MOUNTED SO THAT THE AXES OF THEIR FIELDS OF VIEW WERE PERPENDICULAR TO THE SATELLITE SPIN AXIS. (THE INITIAL SPIN PERIOD WAS 2.2 SEC.) COUNTS IN EACH DETECTOR WERE ACCUMULATED FOR 10.24 SEC, AND THE CONTENTS OF THE ACCUMULATORS WERE TELEMETERED AT THE END OF EACH SAMPLING INTERVAL. THE ENCODER ACCUMULATORS WERE TIME SHARED SO THAT EACH DETECTOR RESPONSE WAS SAMPLED ONCE EVERY 79 SEC. THE EXPERIMENT OPERATED SATISFACTORILY FROM LAUNCH UNTIL SPACECRAFT FAILURE ON DECEMBER 6, 1961.

DATA SET NAME- COUNT RATES AND ORBITAL DATA ON MAGNETIC TAPE

NSSDC ID 61-020A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 08/16/61 TO 12/06/61

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF THREE 7-TRACK MAGNETIC TAPES WRITTEN ON AN IBM 7094 AT 556 BPI IN BCD MODE (FIVE RECCRDS PER BLOCK WITH A LOGICAL RECORD LENGTH OF 342 CHARACTERS). EACH RECORD CONTAINS A TIME REFERENCE, COUNT RATES OF DETECTORS, B AND L COORDINATES BASED ON JENSEN-CAIN COEFFICIENTS, AND ORBITAL DATA IN VARIOUS SYSTEMS. THE DATA ARE IN CHRONOLOGICAL ORDER.

DATA SET NAME- GRAPHICAL SUMMARY OF RESPONSES OF DETECTORS ON MICROFILM

NSSDC ID 61-020A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/16/61 TO 12/06/61

DATA SET BRIEF DESCRIPTION

GRAPHS OF THE RESPONSES (APPROXIMATELY 24 HR PER PLOT) OF THE IOWA CHARGED PARTICLE DETECTORS ON EXPLORER 12 ARE DISPLAYED ON ONE REEL OF 35-MM MICROFILM FOR THE PERIOD AUGUST 16, 1961 (LAUNCH) TO DECEMBER 6, 1961, WHEN TRANSMISSION OF DATA TERMINATED. ALSO INCLUDED ON THE MICROFILM IS A FORMAT FOR THE MASTER FILE OF ORBITAL DATA MERGED WITH SCIENCE DATA (DATA SET 61-020A-03A) AND A COVER LETTER FOR THE EXPLORER 12 DATA FROM DR. L.A. FRANK.

DATA SET NAME- L-INTERPOLATED ELECTRON COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 61-020A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/16/61 TO 12/06/61

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF L-INTERPOLATED, DEAD-TIME CORRECTED, ELECTRON COUNT RATES (FROM DATA SET 61-020A-03A) ON ONE 7-TRACK, IBM 7094, EVEN PARITY, BCD MAGNETIC TAPE WRITTEN AT 556 BPI. THE DATA CONSIST OF CARD IMAGES. THE TAPE CONTAINS ONE FILE (FILE 5) FOR THE TYPE 302 GM COUNTER DATA. THE DATA RECORDS (ONE LOGICAL RECORD PER PHYSICAL RECORD) ARE ORDERED BY L VALUE. EACH DATA RECORD WITHIN THE FILE IS 80 CHARACTERS LONG AND IS PRECEDED BY A 60-CHARACTER HEADER RECORD AND IS FOLLOWED BY A TWO-CHARACTER TRAILER RECORD. THE EXPERIMENTAL DATA HAVE BEEN INTERPLATED TO L= 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, 11.0, 12.0 AND ARE GROUPED BY L VALUE. THE DATA ARE TIME ORDERED WITHIN A GIVEN L-VALUE GROUP. THE DATA FORMAT ALSO INCLUDES TIME (LOCAL, UT, SOLAR ROTATION TIME), GEOMAGNETIC LATITUDE, GEOGRAPHIC LATITUDE, B/BO, AND MCILWAIN'S L VALUE. A SIMILAR DATA SET (62-051A-03D) FROM EXPLORER 14 IS ALSO CONTAINED ON THIS TAPE (FILES 1 THROUGH 4).

EXPERIMENT NAME- COSMIC RAY

NSSDC ID 61-020A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- F.B. MCDONALD, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 12/06/61

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THE COSMIC-RAY EXPERIMENT CONSISTED OF (1) A DOUBLE SCINTILLATION COUNTER THAT MEASURED 55- TO 500-MEV PROTONS IN SIX ENERGY INTERVALS AND PROTONS ABOVE 600 MEV, (2) A SINGLE SCINTILLATOR THAT MEASURED 1.4- TO 22-MEV PROTONS AT FIVE ENERGY THRESHOLDS AND ELECTRONS ABOVE 150 KEV, AND (3) A GM COUNTER TELESCOPE THAT MEASURED PROTON FLUXES ABOVE 30 MEV. A COMPLETE SET OF MEASUREMENTS WAS MADE EVERY 6.8 MIN. THE EXPERIMENT OPERATED THROUGHOUT THE ACTIVE LIFETIME OF THE SPACECRAFT.

DATA SET NAME- REDUCED COUNT RATE DATA ON TAPE

NSSDC ID 61-020A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/16/61 TO 12/06/61

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF SEVEN IBM 7094 BINARY MAGNETIC TAPES THAT WERE SUBMITTED BY THE EXPERIMENTER. THE TAPES CONTAIN A COMPLETE SET OF REDUCED DATA FROM ALL THREE DETECTORS, ALONG WITH THE TIME, ORBIT, AND ATTITUDE PARAMETERS. THE TAPES ARE BLOCKED WITH 6.8 MIN OF DATA PER TAPE RECORD. THE DATA SET INCLUDES DATA FOR THE ACTIVE LIFETIME OF THE SPACECRAFT, AUGUST 16, 1961, TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON MICROFILM IN DATA SET 61-020A-04C.

DATA SET NAME- AVERAGED COUNT RATE DATA ON TAPE

NSSDC ID 61-020A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/16/61 TO 12/06/61

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF ONE IBM 7094 BINARY MAGNETIC TAPE WRITTEN AT 800 BPI. THE TAPE WAS SUBMITTED BY THE EXPERIMENTER AND CONTAINS A COMPLETE SET OF TIME-AVERAGED DATA (FOR 55-MIN PERIODS) FROM ALL THREE DETECTORS, ALONG WITH TIME AND SPACECRAFT HEIGHT. INCLUDED ARE DATA FOR THE ACTIVE LIFETIME OF THE SPACECRAFT, AUGUST 16, 1961, TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON MICROFILM AS DATA SET 61-020A-04D.

DATA SET NAME- REDUCED COUNT RATE DATA ON MICROFILM

NSSDC ID 61-020A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/16/61 TO 12/06/61

**DATA SET BRIEF DESCRIPTION**

TEN REELS OF 16-MM MICROFILM, SUBMITTED BY THE EXPERIMENTER, CONTAIN TABLES LISTING ALL REDUCED DATA FROM THE DETECTORS, ALONG WITH TIME, ORBIT, AND ATTITUDE PARAMETERS. EACH TABLE CONTAINS 6.8 MIN OF DATA. THE DATA SPAN THE FULL LIFETIME OF THE SPACECRAFT, AUGUST 16, 1961, TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE. THE SAME DATA ARE AVAILABLE ON MAGNETIC TAPE IN DATA SET 61-020A-04A.

DATA SET NAME- AVERAGED COUNT RATE DATA ON MICROFILM

NSSDC ID 61-020A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/16/61 TO 12/06/61

THE TWO REELS OF 16-MM MICROFILM IN THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAIN TABLES LISTING A COMPLETE SET OF TIME-AVERAGED DATA (55-MIN AVERAGES) FROM ALL THREE DETECTORS, ALONG WITH TIME AND SPACECRAFT HEIGHT. THE DATA SPAN THE FULL ACTIVE LIFETIME OF THE SPACECRAFT, AUGUST 16, 1961, TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE. THE SAME DATA ARE AVAILABLE ON MAGNETIC TAPE IN DATA SET 61-020A-04B.

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### SPACECRAFT BRIEF DESCRIPTION

### EXPERIMENT BRIEF DESCRIPTION

THE TIROS 4 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER CONSISTED PRIMARILY OF TWO SETS OF BOLOMETERS IN THE FORM OF HOLLOW ALUMINUM HEMISPHERES MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT. THE BOLOMETERS WERE THERMALLY ISOLATED FROM BUT IN CLOSE PROXIMITY TO REFLECTING MIRRORS SO THAT THE HEMISPHERES BEHAVED VERY MUCH LIKE ISOLATED SPHERES IN SPACE. THE EXPERIMENT WAS DESIGNED TO MEASURE THE AMOUNT OF SOLAR ENERGY ABSORBED, REFLECTED, AND EMITTED BY THE EARTH AND ITS ATMOSPHERE. ONE BOLOMETER IN

EACH SET WAS PAINTED BLACK, AND ONE WAS PAINTED WHITE. THE BLACK BOLOMETER ABSORBED MOST OF THE INCIDENT RADIATION WHILE THE WHITE BOLOMETER WAS SENSITIVE MAINLY TO RADIATION WITH WAVELENGTHS LONGER THAN APPROXIMATELY 4 MICRONS. THE REFLECTED AND EMITTED RADIATION CAN THUS BE SEPARATED. THE SENSOR TEMPERATURES WERE MEASURED BY THERMISTORS FASTENED TO THE INSIDE OF THE HOLLOW HEMISPHERE. THE SENSOR TEMPERATURES, TAKEN EVERY 29 SEC, WERE AN AVERAGE OF TWO TEMPERATURES FROM THE MATCHED THERMISTORS. THE EXPERIMENT WAS A SUCCESS, AND USABLE DATA WERE RECEIVED FROM FEBRUARY 8, 1962, TO JUNE 28, 1962. IDENTICAL EXPERIMENTS WERE FLOWN ON TIROS 3 AND 7, AND A SIMILAR ONE WAS CARRIED ON EXPLORER 7.

DATA SET NAME- LOW-RESOLUTION OMNIDIRECTIONAL  
RADIOMETER TEMPERATURE TAPES

NSSDC ID 62-002A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/08/62 TO 06/28/62

DATA SET BRIEF DESCRIPTION

THE TIROS 4 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER DATA ARE AVAILABLE ON 10 MAGNETIC TAPES PRODUCED ON AN IBM 7094 COMPUTER. THESE 7-TRACK, 556-BPI, BCD TAPES CONTAIN BOTH THE BLACK AND WHITE SENSOR TEMPERATURE VALUES OBTAINED FROM THE HEMISPHERIC BOLOMETERS. EACH TEMPERATURE VALUE IS LOCATED WITH RESPECT TO TIME, LATITUDE, AND LONGITUDE.

DATA SET NAME- OMNIDIRECTIONAL RADIOMETER RADIANCE  
VALUE TAPES

NSSDC ID 62-002A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/08/62 TO 06/28/62

DATA SET BRIEF DESCRIPTION

THESE TWO TIROS 4 RADIATION TAPES WERE GENERATED ON AN IBM 7094 COMPUTER FROM THE LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER TEMPERATURE VALUES. THE 7-TRACK TAPES WERE WRITTEN IN BCD AT 556 BPI. THE TEMPERATURE VALUES WERE CONVERTED TO LONGWAVE RADIATION VALUES IN LANGLEYS PER MINUTE. ALBEDOS EXPRESSED AS PERCENTAGES WERE DETERMINED. THESE VALUES, ALONG WITH COORDINATES OF THE SUBSATELLITE POINT, TIME, AND ZENITH ANGLE OF THE SUN WITH RESPECT TO THE SATELLITE, ARE GIVEN. THE TWO TAPES OF ANALYZED DATA ARE AVAILABLE FOR THE PERIOD OF THE EXPERIMENT. ADDITIONAL INFORMATION ABOUT THE SENSORS, DATA, AND DATA MANIPULATION IS GIVEN IN A 1965 PH.D. THESIS FROM THE UNIVERSITY OF WISCONSIN BY FREDERICK B. HOUSE TITLED, 'THE RADIATION BALANCE OF THE EARTH FROM A SATELLITE.'

EXPERIMENT NAME- SCANNING RADIOMETER

NSSDC ID 62-002A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- J.D. BARKSDALE, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 06/30/62

EXPERIMENT BRIEF DESCRIPTION

THE SCANNING RADIOMETER OF THE TIROS 4 METEOROLOGICAL SATELLITE MEASURED THE EMITTED AND REFLECTED RADIATION OF THE EARTH AND ITS ATMOSPHERE. THE RADIOMETER SCANNED THE EARTH AND SPACE AS THE SATELLITE SPUN ABOUT ITS AXIS. FIVE RADIOMETERS, USING BOLOMETER DETECTORS AND FILTERS TO LIMIT THE SPECTRAL RESPONSE, PROVIDED COMPREHENSIVE DATA BY MEASURING RADIATION INTENSITIES IN SELECTED PORTIONS OF THE INFRARED SPECTRUM. THE SPECTRAL BANDWIDTH OF EACH RADIOMETER (IN MICRONS) AND ITS ASSOCIATED PARAMETER ARE AS FOLLOWS -- CHANNEL 1, 6.0 TO 6.5 (WATER VAPOR ABSORPTION), CHANNEL 2, 80 TO 120 (ATMOSPHERIC WINDOW), CHANNEL 3, 0.2 TO 6.0 (REFLECTED SOLAR RADIATION, CHANNEL 4 WAS USED TO TRANSMIT A REDUNDANT TIME REFERENCE SIGNAL THEREBY ELIMINATING THE BROADBAND THERMAL RADIATION CHANNEL THAT WAS CARRIED IN PREVIOUS TIROS SATELLITES, AND CHANNEL 5, 0.55 TO 0.75 (RESPONSE OF TV SYSTEM). INITIALLY, ALL CHANNELS PERFORMED NORMALLY. THE MAJOR LIMITATION OF THE EXPERIMENT IS THE UNCERTAINTY IN THE ABSOLUTE VALUE OF THE MEASUREMENTS, RESULTING FROM THE POSTLAUNCH DEGRADATION OF THE SENSOR RESPONSE. IN STUDIES INVOLVING COMPARATIVE MEASUREMENTS OVER MANY DAYS, THE DATA FROM CHANNELS 2 AND 3 AFTER ORBIT 600 SHOULD BE USED WHENEVER POSSIBLE BECAUSE THE RESPONSE OF THESE TWO CHANNELS APPEARS TO STABILIZE AND REMAIN CONSTANT AFTER THAT TIME. THE TAPE RECORDER FAILED ON JULY 3, 1962, BUT THE LAST USABLE DATA WERE OBTAINED ON JUNE 30, 1962.

DATA SET NAME- FINAL METEOROLOGICAL RADIATION TAPES  
(FMRT)

NSSDC ID 62-002A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/08/62 TO 06/30/62

DATA SET BRIEF DESCRIPTION

THE 132 TIROS 4 FINAL METEOROLOGICAL RADIATION TAPES (FMRT) ARE THE PRODUCT OF AN IBM 7054 COMPUTER PROGRAM WHOSE INPUT IS THE ATTITUDE/ORBITAL DATA, DIGITAL RADIATION DATA, AND THE TIROS RADIOMETER CALIBRATION PACKAGE. THE TAPES ALSO INCLUDE GEOGRAPHICAL LOCATIONS ASSOCIATED WITH THE RADIATION MEASUREMENTS, SOLAR EPHEMERIS, AND SATELLITE TEMPERATURE. THESE 7-TRACK, 200-BPI, BINARY TAPES CONTAIN THE ORIGINAL REDUCED DATA IN THEIR ENTIRETY. EACH TAPE CONTAINS APPROXIMATELY 1 DAY OF DATA (EIGHT ORBITS). THE EXACT FORMAT OF THE FMRT TAPES IS DESCRIBED IN THE 'TIROS IV RADIATION DATA CATALOG AND USERS' MANUAL.'

DATA SET NAME- RADIATION DATA CATALOG AND USERS' MANUAL

NSSDC ID 62-002A-03B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 02/08/62 TO 06/30/62

DATA SET BRIEF DESCRIPTION

THE 'TIROS IV RADIATION DATA CATALOG AND USERS' MANUAL' FULLY DESCRIBES THE TIROS 4 METEOROLOGICAL SATELLITE SCANNING RADIOMETER AND ITS CALIBRATION, DATA PROCESSING, FINAL METEOROLOGICAL RADIATION TAPES (FMRT), THE OBSERVED DEGRADATION PATTERNS, AND POSSIBLE CORRECTIONS FOR DEGRADATION. THE CATALOG/MANUAL ALSO INCLUDES, IN TWO FORMS, DOCUMENTATION OF EACH ORBIT OF SUCCESSFULLY REDUCED RADIATION DATA ACQUIRED BY TIROS 4. APPENDIX A IS AN INDEX OF THE FMRT. THIS INDEX IS DIVIDED INTO TWO SECTIONS. ONE SECTION CONTAINS INFORMATION CONCERNING THE ATTITUDE OF THE SATELLITE AND THE LOCATION OF THE SUBPOINT TRACK AS A FUNCTION OF TIME. THE SECOND SECTION OF THE INDEX GIVES THE TIME FOR WHICH RADIATION DATA ARE AVAILABLE ON THE FMRT. APPENDIX B IS A SUBPOINT TRACK SUMMARY OF AVAILABLE RADIATION DATA IN DIAGRAMMATIC FORM. DATA ON THE FMRT ARE AVAILABLE FROM FEBRUARY 8, 1962, TO JUNE 30, 1962.

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SPACECRAFT NAME- OSO 1

NSSDC ID 62-006A

OTHER NAMES- 1962 ZETA 1, S 16, OSO-A, 62-006A.

LAUNCH DATE- 03/07/62

DATE LAST SCIENTIFIC DATA RECORDED- 05/00/64

AGENCY- NASA-GSFC

SPACECRAFT WEIGHT IN ORBIT-

208 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 03/07/62

ORBIT PERIOD- 96.2 MIN.

APOGEE- 596. KM ALT

PERIGEE- 554. KM ALT

INCLINATION- 32.8 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE OBJECTIVES OF THE OSO SATELLITE SERIES WERE TO PERFORM SOLAR PHYSICS EXPERIMENTS ABOVE THE ATMOSPHERE DURING A COMPLETE SOLAR CYCLE AND TO MAP THE CELESTIAL SPHERE FOR DIRECTION AND INTENSITY OF UV LIGHT, X RAYS, AND GAMMA RADIATION. THE OSO 1 PLATFORM CONSISTED OF A SAIL SECTION, WHICH POINTED TWO EXPERIMENTS CONTINUOUSLY TOWARD THE SUN, AND A WHEEL SECTION, WHICH SPUN ABOUT AN AXIS PERPENDICULAR TO THE POINTING DIRECTION OF THE SAIL AND CARRIED SEVEN EXPERIMENTS. ATTITUDE ADJUSTMENT WAS PERFORMED BY GAS JETS. DATA WERE SIMULTANEOUSLY RECORDED ON TAPE AND TRANSMITTED BY FM/FM TELEMETRY. A COMMAND SYSTEM PROVIDED FOR 10 GROUND-BASED COMMANDS. THE SPACECRAFT PERFORMED NORMALLY UNTIL THE SECOND ONBOARD TAPE RECORDER FAILED MAY 15, 1962. THE SPACECRAFT PROVIDED REAL-TIME DATA UNTIL MAY 1964, WHEN ITS POWER CELLS FAILED.



EXPERIMENT NAME- SOLAR SPECTROMETER

NSSDC ID 62-006A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- W.M. NEUPERT, NASA-GSFC , GREENBELT, MD.  
W.E. BEHRING, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 05/15/62

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO MEASURE SOLAR EUV RADIATION IN THE RANGE OF 10 TO 400 Å BY A GRATING SPECTROMETER. THE SPECTRAL RANGE WAS SCANNED EVERY 8 MIN WHEN THE SPACECRAFT WAS IN SUNLIGHT. THE EXPERIMENT WORKED DURING THE PERIOD MARCH 7 TO MAY 15, 1962, AND OVER 7000 SPECTRA WERE OBTAINED. BELOW 170 Å, THE DATA ARE DIFFICULT TO INTERPRET DUE TO LOWER SENSITIVITY AND SCATTERED RADIATION. ABOVE 342 Å, THE SECOND ORDER IMAGES OBSCURE THE DATA.

DATA SET NAME- SOLAR EUV SPECTRAL SCANS ON MICROFILM

NSSDC ID 62-006A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 03/07/62 TO 05/15/62

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF OVER 7000 SPECTRAL SCANS OF SOLAR EUV RADIATION IN THE RANGE OF 140 TO 400 Å. COUNTING RATE RECORDED AS AMPLITUDE HAS BEEN PLOTTED VS THE DISTANCE FROM THE POLE OF THE GRATING TO THE EXIT SLIT ON A SEMILOGARITHMIC SCALE FOR EACH SCAN. MARKERS CORRESPONDING TO WAVELENGTHS OF 140 AND 230 Å HAVE BEEN LABELED BY HAND WITH UT. ONLY THE DATA BETWEEN 170 AND 340 Å CAN BE CONSIDERED USABLE. THE 10- TO 140-Å DATA WERE PLOTTED SEPARATELY AND CAN BE OBTAINED FROM THE EXPERIMENTER. THE 140- TO 400-Å PLOTS HAVE BEEN MICROFILMED, AND THE DATA ARE AVAILABLE ON 12 REELS OF 35-MM MICROFILM. SOME OF THE PLOTS HAVE EITHER MISSING TIME MARKS, GAPS IN THE DATA, OR UNUSUAL SPIKES. A DATA USERS' NOTE, NSSDC 67-03, DESCRIBES THE DATA IN MORE DETAIL.

EXPERIMENT NAME- GAMMA-RAY SCINTILLATION DETECTOR

NSSDC ID 62-006A-08

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- L.E. PETERSON, U OF CALIFORNIA, SD , LA JOLLA, CALIF.

DATE LAST USEFUL DATA RECORDED- 05/15/62

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MONITOR THE INTENSITY AND DIRECTIONAL PROPERTIES OF GAMMA RAYS BETWEEN 50 KEV AND 3 MEV. THE DETECTION SYSTEM CONSISTED OF THREE SCINTILLATION COUNTERS ARRANGED IN VARIOUS LOGICAL AND SHIELDING CONFIGURATIONS TO PROVIDE DIRECTIONAL PROPERTIES OF GAMMA RAYS AND A PLASTIC PHOSWICH COUNTER TO REJECT UNWANTED COSMIC RAYS PRODUCED IN THE BACKGROUND. THE INSTRUMENT WAS MOUNTED IN THE WHEEL SECTION OF THE SPACECRAFT. ALL THREE SCINTILLATION COUNTERS OPERATED DURING THE SUNLIT PORTION OF EACH ORBIT. DURING THE NIGHT PORTION, ONLY THE COSMIC-RAY SINGLES COUNTER OPERATED. THE VARIOUS BACKGROUND EFFECTS ENCOUNTERED DURING FLIGHT PROMPTED THE FLIGHT OF SIMILAR DETECTORS ON A BALLOON TO DETERMINE THE COSMIC-RAY EFFECTS IN THE MATERIALS SURROUNDING THE DETECTORS.

DATA SET NAME- COSMIC-RAY AND SCALAR GAMMA-RAY FLUX DATA  
ON TAPE

NSSDC ID 62-006A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 03/07/62 TO 05/15/62

#### DATA SET BRIEF DESCRIPTION

A TOTAL OF 614 HR OF GOOD DAYTIME DATA AND 318 HR OF NIGHTTIME DATA ARE AVAILABLE FROM THE FIRST 1035 ORBITS, WHICH COVERED THE TIME PERIOD MARCH 7, 1962, TO MAY 15, 1962. THE DATA ARE ON THREE REELS OF MAGNETIC TAPE IN BCD MODE AT A DENSITY OF 556 BPI WITH 960 CHARACTERS PER RECORD. THE FOLLOWING INFORMATION IS INCLUDED FOR EACH PASS -- (1) PASS NUMBER, (2) UT, (3) LATITUDE, LONGITUDE, ALTITUDE, B. L, (4) COMPUTED TRAPPED RADIATION ENVIRONMENT, (5) DECOMMUTATED DIGITAL DATA, (6) COUNTING RATES AND ID FOR EACH DATA FRAME, AND (7) NECESSARY SPACECRAFT ORIENTATION PARAMETERS. DUE TO BACKGROUND PROBLEMS, DATA CAN BE USED ONLY TO DETERMINE THE UPPER LIMITS OF GAMMA-RAY FLUX.

EXPERIMENT NAME- PROTON ELECTRON ANALYZER

NSSDC ID 62-006A-11

ORIGINAL EXPERIMENT INSTITUTION- LAWRENCE RADIATION LAB

INVESTIGATORS- C.D. SCHRADER, LAWRENCE RADIATION LAB , LIVERMORE, CALIF.  
J.A. WAGGONER, LAWRENCE RADIATION LAB , LIVERMORE, CALIF.

DATE LAST USEFUL DATA RECORDED- 07/14/63

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETERMINE THE TIME AND POSITION VARIATIONS OF THE DIRECTIONAL FLUXES OF PROTONS WITH ENERGIES ABOVE 2 MEV AND ELECTRONS WITH ENERGIES ABOVE 60 KEV IN THE REGION BELOW THE VAN ALLEN BELTS. THE EXPERIMENT, MOUNTED IN THE WHEEL SECTION OF THE SPACECRAFT, CONSISTED OF A STILBENE SCINTILLATOR CRYSTAL MOUNTED ON AN RCA C7151 RUGGEDIZED PHOTOMULTIPLIER TUBE. IN THIS TYPE SCINTILLATOR, PROTONS AND

ELECTRONS PRODUCE FLUORESCENT PULSES OF DISTINCTLY DIFFERENT DECAY TIMES THEREBY ALLOWING THE TWO PARTICLES TO BE COUNTED SEPARATELY. THE EXPERIMENT PERFORMED WELL INITIALLY AND TRANSMITTED USEFUL DATA UNTIL JULY 14, 1963.

DATA SET NAME- PROTON AND ELECTRON COUNT RATES ON TAPE

NSSDC ID 62-006A-11A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 03/07/62 TO 05/15/62

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ELEVEN 7-TRACK, 556-BPI, BCD TAPES SUBMITTED BY THE EXPERIMENTER. THE TAPES CONTAIN APPROXIMATELY 1.2 MILLION 80-CHARACTER CARD IMAGES, WHICH WERE USED TO PLOT SOME OF THE DATA IN DATA SET 62-006A-11C. THE TAPES CONTAIN ELECTRON AND PROTON COUNT RATES (6.4-SEC AVERAGES) AS FUNCTIONS OF UT, B, AND L. EPHEMERIS INFORMATION IS PRESENTED IN THE FORM OF LATITUDE, LONGITUDE, AND ALTITUDE VS UT. ALSO PRESENTED ON THESE TAPES ARE THE DATA FROM THE UNIVERSITY OF CALIFORNIA NEUTRON DETECTOR (62-006A-10). THESE TAPES, WHICH ARE NOT IN TIME ORDER, CONTAIN DATA FROM APPROXIMATELY 75 PERCENT OF THE ORBITS BETWEEN MARCH 7, 1962, AND MAY 15, 1962 (ORBITS 1 THROUGH 1039). A TIME-ORDERED AND PREFERRED VERSION OF THESE DATA IS FOUND IN DATA SET 62-006A-11B.

DATA SET NAME- TIME-ORDERED PROTON AND ELECTRON COUNT  
RATES ON TAPE

NSSDC ID 62-006A-11B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/07/62 TO 05/15/62

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FOUR 7-TRACK, 556-BPI, BCD TAPES THAT WERE GENERATED AT THE LAWRENCE RADIATION LABORATORY BY TIME ORDERING THE 11 TAPES IN DATA SET 62-006A-11A. THE TAPES CONTAIN ONE FILE PER ORBIT WITH A VARIABLE NUMBER OF PHYSICAL RECORDS PER FILE. EACH PHYSICAL RECORD IS MADE UP OF FORTY 80-CHARACTER LOGICAL RECORDS. THE 80-CHARACTER RECORDS ARE THE CARD IMAGES THAT WERE USED TO GENERATE SOME OF THE PLOTS FOUND IN DATA SET 62-006A-11C. THE DATA ARE IN THE FORM OF ELECTRON AND PROTON COUNT RATES (6.4-SEC AVERAGES) AS FUNCTIONS OF UT, B, AND L. EPHEMERIS INFORMATION IS PRESENTED IN THE FORM OF LATITUDE, LONGITUDE, AND ALTITUDE VS UT. THESE TAPES CONTAIN DATA FROM APPROXIMATELY 75 PERCENT OF THE ORBITS BETWEEN MARCH 7, 1962, AND MAY 15, 1962 (ORBITS 1 THROUGH 1039).

DATA SET NAME- PLOTS OF PROTON AND ELECTRON COUNT RATES  
ON MICROFILM

NSSDC ID 62-006A-11C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/07/62 TO 07/14/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 21 REELS OF 35-MM MICROFILM SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS DATA FROM APPROXIMATELY ONE ORBIT. ELECTRON AND PROTON COUNT RATES, IN THE FORM OF 6.4-SEC AVERAGES, ARE PLOTTED AGAINST UT, B, L, INVARIANT LATITUDE, AND THE DIFFERENCE BETWEEN THE SPACECRAFT SPIN AXIS AND THE GEOMAGNETIC FIELD. EACH FRAME IS IDENTIFIED BY DATE AND ORBIT NUMBER. EPHEMERIS INFORMATION IS PRESENTED IN THE FORM OF PLOTS OF LATITUDE, LONGITUDE, AND ALTITUDE VS UT. THE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 50 PERCENT OF THE PERIOD FROM MARCH 7, 1962, TO JULY 6, 1962 (ORBITS 1 THROUGH 1802) AND APPROXIMATELY 10 PERCENT OF THE PERIOD FROM JULY 6, 1962, TO JULY 14, 1963 (ORBITS 1803 THROUGH 7419). ALSO PRESENTED ARE DATA FROM THE UNIVERSITY OF CALIFORNIA NEUTRON DETECTOR.

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SPACECRAFT NAME- ARIEL 1 NSSDC ID 62-015A  
OTHER NAMES- S 51, UK 1, 1962 OMICRON 1, 62-015A

LAUNCH DATE- 04/26/62 DATE LAST SCIENTIFIC DATA RECORDED- 11/09/64

AGENCY- UK-NASA SPACECRAFT WEIGHT IN ORBIT- 60 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 04/26/62 ORBIT PERIOD- 101 MIN.  
APOGEE- 1214. KM ALT PERIGEE- 390. KM ALT INCLINATION- 53.870 DEGREES

SPACECRAFT BRIEF DESCRIPTION

ARIEL 1 WAS DESIGNED TO CONTRIBUTE TO THE CURRENT KNOWLEDGE OF THE IONOSPHERE AND OF THE COMPLEX SUN-IONOSPHERE RELATIONSHIPS. THE SATELLITE WAS A 62-KG CYLINDER WITH A 58-CM DIAMETER AND A HEIGHT OF 22 CM. A TAPE RECORDER AND INSTRUMENTATION FOR ONE COSMIC-RAY, TWO SOLAR EMISSION, AND THREE IONOSPHERIC EXPERIMENTS WERE ON BOARD THE SATELLITE. EXCEPT FOR FAILURE AT LAUNCH OF THE SOLAR LYMAN-ALPHA EXPERIMENT, THE SPACECRAFT OPERATED NOMINALLY UNTIL JULY 9, 1962. BETWEEN THAT DATE AND SEPTEMBER 8, 1962, SPACECRAFT OPERATION WAS LIMITED. THE SPACECRAFT WAS OPERATED AGAIN FROM AUGUST 25, 1964, TO NOVEMBER 9, 1964, TO OBTAIN DATA CONCURRENT IN TIME WITH EXPLORER 20 (64-051A).

EXPERIMENT NAME- RADIO FREQUENCY CAPACITANCE PROBE NSSDC ID 62-015A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF BIRMINGHAM

INVESTIGATORS- J. SAYERS, U OF BIRMINGHAM, BIRMINGHAM, ENGLAND  
P. ROTHWELL, U OF BIRMINGHAM, BIRMINGHAM, ENGLAND  
J.H. WAGER, U OF BIRMINGHAM, BIRMINGHAM, ENGLAND

DATE LAST USEFUL DATA RECORDED- 07/31/62

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A CAPACITANCE PROBE USED TO OBSERVE THE DENSITY OF THERMAL ELECTRONS IN THE TOPSIDE IONOSPHERE. THE PROBE CONSISTED OF TWO FLAT, CIRCULAR WIRE MESH GRIDS PLACED PARALLEL TO EACH OTHER. IT COULD OBSERVE ELECTRON NUMBER DENSITIES FROM 0.25 TIMES 10 TO THE 4 POWER TO 0.08 TIMES 10 TO THE 6 POWER CM CUBED. THE PERFORMANCE WAS NOMINAL UNTIL JULY 8, 1962, AFTER WHICH TIME THE STARFISH EXPLOSION CAUSED OBSERVATIONS TO BE INTERMITTENT AND OF DEGRADED QUALITY. THE LAST USEFUL DATA WERE RECEIVED ON JULY 31, 1962, JUST PRIOR TO FAILURE OF THE TAPE RECORDER.

DATA SET NAME- ANALYZED ELECTRON DENSITY DATA ON TAPE

NSSDC ID 62-015A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/27/62 TO 07/08/62

DATA SET BRIEF DESCRIPTION

THESE ANALYZED ELECTRON DENSITY DATA ARE ON ONE 7-TRACK, 556-BPI, IBM 7094, BCD MAGNETIC TAPE. THEY ARE MERGED WITH STANDARD EPHEMERIDES, GEOPOTENTIAL ALTITUDE, LOCAL SOLAR TIME, AND B AND L. THE VALUES ARE GLOBAL IN COVERAGE UP TO PLUS OR MINUS 54 DEG LAT AND WERE OBSERVED FROM APRIL 27 THROUGH JULY 8, 1962. THEY COVER ALL TIMES OF DAY. THE SAME DATA ARE AVAILABLE ON MICROFILM AS DATA SET 62-015A-01B.

DATA SET NAME- ANALYZED ELECTRON DENSITY DATA ON  
MICROFILM

NSSDC ID 62-015A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/27/62 TO 07/08/62

DATA SET BRIEF DESCRIPTION

THESE ANALYZED ELECTRON DENSITY DATA ARE ON ONE REEL OF MICROFILM MERGED WITH STANDARD EPHEMERIDES, GEOPOTENTIAL ALTITUDE, LOCAL SOLAR TIME, AND B AND L. THE VALUES ARE GLOBAL IN COVERAGE UP TO PLUS OR MINUS 54 DEG LAT AND WERE OBSERVED FROM APRIL 27 THROUGH JULY 8, 1962. THEY COVER ALL TIMES OF DAY. THE SAME DATA ARE AVAILABLE ON DIGITAL MAGNETIC TAPE AS DATA SET 62-015A-01A.

EXPERIMENT NAME- COSMIC-RAY DETECTOR

NSSDC ID 62-015A-03

ORIGINAL EXPERIMENT INSTITUTION- IMPERIAL COLLEGE

INVESTIGATORS- H. ELLIOT, IMPERIAL COLLEGE, LONDON, ENGLAND  
J.J. QUENBY, IMPERIAL COLLEGE, LONDON, ENGLAND  
R.J. HYND, IMPERIAL COLLEGE, LONDON, ENGLAND  
A.C. CURNEY, IMPERIAL COLLEGE, LONDON, ENGLAND

DATE LAST USEFUL DATA RECORDED- 07/12/62

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO STUDY THE PRIMARY COSMIC-RAY RIGIDITY SPECTRUM WITH Z.GE. 5 AND RIGIDITIES BETWEEN 2.5 AND 16.0 GV USING AN OMNIDIRECTIONAL CERENKOV COUNTER AND AN ANTON TYPE 302 GEIGER TUBE DETECTOR (USED FOR BACKGROUND MONITORING). THE DETECTOR ACCUMULATORS WERE READ OUT EVERY 31 SEC. THE INITIAL SPACECRAFT SPIN PERIOD WAS 1.7 SEC. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH TO JULY 12, 1962. AFTER THAT DATE, TRANSMISSION WAS INTERMITTENT UNTIL MID-AUGUST 1962, AFTER WHICH NO FURTHER INFORMATION WAS RECEIVED.

DATA SET NAME- REDUCED COUNT RATE AND ORBITAL DATA ON  
MAGNETIC TAPE

NSSDC ID 62-015A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/27/62 TO 07/12/62

DATA SET BRIEF DESCRIPTION

THE REDUCED COUNT RATE AND ORBITAL DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 556 BPI. THE DATA ARE IN CHRONOLOGICAL ORDER COVERING THE TIME PERIOD FROM APRIL 27, 1962, TO JULY 12, 1962. EACH OF THE 595 FILES ON THE TAPE CONSISTS OF SEVERAL PHYSICAL RECORDS. EACH PHYSICAL RECORD HAS A FIXED LENGTH OF 2460 CHARACTERS, AND EACH LOGICAL RECORD IS 55 CHARACTERS LONG.

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SPACECRAFT NAME- TELSTAR 1

NSSDC ID 62-029A

OTHER NAMES- 1962 ALPHA EPSILON 1, A 40, 62-029A

LAUNCH DATE- 07/10/62

DATE LAST SCIENTIFIC DATA RECORDED- 02/21/63

AGENCY- AT+T-BTL

SPACECRAFT WEIGHT IN ORBIT-

77 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 02/27/63

ORBIT PERIOD- 157.7 MIN.

APOGEE- 5636. KM ALT

PERIGEE- 954. KM ALT

INCLINATION- 44.78 DEGREES

SPACECRAFT BRIEF DESCRIPTION

TELSTAR 1, PRIMARILY A COMMUNICATIONS SATELLITE, CARRIED AN EXPERIMENT DESIGNED TO MEASURE THE ENERGETIC PROTON AND ELECTRON DISTRIBUTION IN THE VAN ALLEN BELTS. THE SPACECRAFT SPIN RATE VARIED ACCORDING TO  $R = 178.2 \exp(-T/333)$  RPM WHERE T WAS IN DAYS FROM LAUNCH. THE SPIN AXIS ORIGINAL ORIENTATION WAS RIGHT ASCENSION 81.96 DEG AND DECLINATION -65.57 DEG. IT VARIED SLOWLY OVER THE LIFETIME OF THE SPACECRAFT. FOR EXAMPLE, ON NOVEMBER 9, 1962, THE RIGHT ASCENSION WAS 94.05 DEG, AND THE DECLINATION WAS -51.91 DEG. SCIENTIFIC INFORMATION WAS TRANSMITTED BY THE SPACECRAFT BEACON, WHICH WAS ONE OF TWO ONEBOARD TRANSMITTERS, VIA A PGM/FM/AM ENCODER. THE TELEMETRY

SEQUENCE REQUIRED ABOUT 1 MIN. THE SPACECRAFT OPERATED NORMALLY FROM LAUNCH UNTIL NOVEMBER 1962, WHEN THE COMMAND CHANNEL BEGAN TO BEHAVE ERRATICALLY. THE SATELLITE WAS TURNED ON CONTINUOUSLY TO CIRCUMVENT THIS PROBLEM. ON NOVEMBER 23, 1962, THE COMMAND CHANNEL CEASED TO RESPOND. ON DECEMBER 20, THE SATELLITE WAS SUCCESSFULLY REACTIVATED, AND INTERMITTENT DATA WERE OBTAINED UNTIL FEBRUARY 21, 1963, WHEN THE TRANSMITTER FAILED.

EXPERIMENT NAME- PROTON AND ELECTRON RADIATION

NSSDC ID 62-029A-01

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

INVESTIGATORS- W.L. BROWN, BELL TELEPHONE LAB , MURRAY HILL, N.J.

DATE LAST USEFUL DATA RECORDED- 02/21/63

#### EXPERIMENT BRIEF DESCRIPTION

THREE P-N JUNCTION SOLID-STATE DIODES SEPARATELY MEASURED PROTONS (1) DIRECTIONALLY IN NINE RANGES FROM 2.4 TO 25 MEV WITH AN APERTURE OF 25 DEG HALF ANGLE, (2) OMNIDIRECTIONALLY FROM 26 TO 34 MEV, AND (3) OMNIDIRECTIONALLY GREATER THAN 50 MEV. A FOURTH P-N JUNCTION DIODE MEASURED ELECTRONS WITH FOUR RANGES (180 TO 280, 285 TO 440, 390 TO 615, AND 635 TO 990 KEV) WITH AN APERTURE OF 20 DEG HALF ANGLE. EACH DIRECTIONAL PROTON ENERGY CHANNEL WAS SAMPLED ONCE EVERY 3 MIN, EACH OF THE TWO OMNIDIRECTIONAL PROTON DETECTORS WAS SAMPLED ONCE PER MIN, AND EACH OF THE FOUR ELECTRON ENERGY CHANNELS WAS SAMPLED ONCE EVERY 2 MIN. ACCUMULATION TIMES EXCEEDED THE SPACECRAFT SPIN PERIOD. THE INSTRUMENTS OPERATED THROUGHOUT THE LIFETIME OF THE SPACECRAFT.

DATA SET NAME- REDUCED ELECTRON AND PROTON DATA ON  
MAGNETIC TAPE

NSSDC ID 62-029A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/10/62 TO 02/21/63

#### DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET GENERATED AT BELL TELEPHONE LABS CONTAINS 800-BPI, 7-TRACK, BCD, IBM 7094, ODD PARITY MAGNETIC TAPES FROM THE BTL EXPERIMENT. EACH FILE ON THESE TAPES CONTAINS A BCD HEADER RECORD. THE REST OF THE TAPE IS BINARY. THE LOGICAL RECORD LENGTH IS 54 (36-BIT) WORDS. EACH RECORD CONTAINS EPHEMERIS AND TIME INFORMATION, MAGNETIC FIELD, MCILWAIN L, AND SATELLITE STATE DATA SUCH AS SKIN TEMPERATURE, DETECTOR TEMPERATURE, ETC. ALSO PRESENTED ARE COUNTS FROM THE ELECTRON DETECTOR IN EACH BIAS MODE, WITH INTERPOLATED VALUES OF B, L, AND GAMMA, AND COUNTS FROM THE TWO PROTON DETECTORS IN EACH BIAS MODE WITH CORRESPONDING VALUES OF B, L, AND GAMMA, WHERE GAMMA IS THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND MODEL MAGNETIC FIELD DIRECTION. THE DATA ARE TIME ORDERED.

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SPACECRAFT NAME- MARINER 2  
OTHER NAMES- 1962 ALPHA RHO 1, P 38, MARINER R-2,  
62-041A

NSSDC ID 62-041A

LAUNCH DATE- 08/27/62 DATE LAST SCIENTIFIC DATA RECORDED- 01/03/63

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 203 KG

ORBIT TYPE- HELIOCENTRIC EPOCH- 08/27/62 ORBIT PERIOD- 292 DAYS  
APOGEE- 1.0 AU RAD PERIGEE- 0.72 AU RAD INCLINATION- 0 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE MARINER 2 SPACECRAFT WAS THE SECOND OF A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY, OR NON-LANDING, MODE. MARINER 2 WAS A BACKUP FOR THE MARINER 1 MISSION WHICH FAILED SHORTLY AFTER LAUNCH TO VENUS. THE SPACECRAFT WAS ATTITUDE STABILIZED USING THE SUN AND EARTH AS REFERENCES. THE SPACECRAFT WAS SOLAR POWERED AND CAPABLE OF CONTINUOUS TELEMETRY OPERATION. THE SPACECRAFT OBTAINED DATA ON THE INTERPLANETARY MEDIUM DURING THE FLIGHT TO VENUS AND BEYOND AND OBTAINED PLANETARY DATA DURING THE ENCOUNTER OF VENUS. THE SPACECRAFT PASSED 41,000 KM FROM VENUS ON DECEMBER 14, 1962.

EXPERIMENT NAME- INFRARED RADIOMETER

NSSDC ID 62-041A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- M.M. NEUGEBAUER, NASA-JPL, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 12/14/62

#### EXPERIMENT BRIEF DESCRIPTION

THE INFRARED RADIOMETER ON MARINER 2 WAS DESIGNED TO MEASURE THE RADIATION TEMPERATURES OF SMALL AREAS OF VENUS IN THE 8.4- AND 10.4-MICRON BANDS. OPTICALLY, THE RADIOMETER CONSISTED OF TWO SIMILAR LENS SYSTEMS WHOSE AXES WERE SEPARATED BY 45 DEG. ONE SYSTEM, ESTABLISHING THE CHOPPING REFERENCE, VIEWED DARK SPACE, AND THE OTHER VIEWED THE PLANET. THE ENERGY THROUGH THE TWO SYSTEMS WAS COMBINED INTO A SINGLE CHOPPED BEAM THAT WAS IN TURN SPLIT BY A DICHROIC FILTER INTO TWO PERPENDICULAR BEAMS THAT WERE INCIDENT ON TWO THERMISTOR BOLOMETER DETECTORS. THREE SUCCESSFUL SCANS WERE ACCOMPLISHED DURING PLANETARY FLYBY ON DECEMBER 14, 1962. THE ACCURACY OF THE RADIATION TEMPERATURES OBTAINED VARIED FROM 2 DEG FOR SOURCE TEMPERATURES NEAR 200 DEG K TO 10 DEG FOR SOURCE TEMPERATURES NEAR 500 DEG K. A COMPLETE DESCRIPTION AND PERFORMANCE SUMMARY FOR THE MARINER 2 RADIOMETER IS GIVEN IN 'MARINER-VENUS 1962, FINAL PROJECT REPORT,' NASA SP-59, 1965.



CATA SET NAME- PUBLISHED INFRARED RADIATION TEMPERATURES

NSSDC ID 62-041A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 12/14/62 TO 12/14/62

DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF RADIATION TEMPERATURES OF THE 8.4- AND 10.4-MICRON BANDS, WHICH ARE AVAILABLE FOR THREE SCANS THAT WERE ACCOMPLISHED DURING PLANETARY FLYBY ON DECEMBER 14, 1962. EACH APPROXIMATELY MERIDIANAL SCAN CONSISTS OF ABOUT FIVE TO EIGHT FRAMES, WITH THE FIRST SCAN CROSSING THE DARK SIDE NEAR 50 DEG LONGITUDE, THE SECOND NEAR THE TERMINATOR, AND THE THIRD IN THE SUNLIT SIDE NEAR 60 DEG LONGITUDE. THE ACCURACY OF THE TEMPERATURES OBTAINED VARIES FROM 2 DEG FOR SOURCE TEMPERATURES NEAR 500 DEG K TO 10 DEG FOR SOURCE TEMPERATURES NEAR 500 DEG K. THE SPATIAL RESOLUTION IS 1/250 FOR THE TOTAL PLANETARY AREA. THE DATA CAN BE FOUND IN J. GEOPHYS. RES., 68, 6157-6169, 1963. A COMPLETE DESCRIPTION OF THE INSTRUMENTATION, OPERATION, AND CALIBRATION OF THE RADIOMETER IS ALSO PRESENTED.

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID 62-041A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

INVESTIGATORS- P.J. COLEMAN, JR., U OF CALIFORNIA, LA , LOS ANGELES, CALIF.

DATE LAST USEFUL DATA RECORDED- 01/03/63

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE MAGNITUDE AND DIRECTION OF THE INTERPLANETARY AND VENUSIAN MAGNETIC FIELDS. IT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETOMETERS MOUNTED ON TOP OF A 1.5-M TOWER. ONE MAGNETOMETER AXIS WAS PARALLEL TO THE SPACECRAFT ROLL AXIS. IN THE HIGH SENSITIVITY MODE, EACH MAGNETOMETER HAD A DYNAMIC RANGE OF -64 TO +64 GAMMAS WITH AN ACCURACY OF +0.5 GAMMA. IN THE LOW SENSITIVITY MODE, THIS RANGE WAS -320 TO +320 GAMMAS WITH AN ACCURACY OF +2.5 GAMMAS. ALL THREE MAGNETOMETERS WERE SAMPLED WITHIN 8.64 SEC, AND THIS SEQUENCE OF SAMPLING WAS REPEATED EVERY 36.96 SEC (OR EVERY 20.16 SEC DURING THE VENUS ENCOUNTER ON DECEMBER 14, 1962). AN INFLIGHT CALIBRATION SYSTEM WAS DESIGNED TO CHECK THE SENSITIVITY OF THE THREE MAGNETOMETERS ONCE DURING EACH 15.77-HR PERIOD. DUE TO A FAILURE IN THE CONTROL CIRCUIT, INFLIGHT CALIBRATIONS WERE PERFORMED MORE OFTEN AND IN A RANDOM FASHION. OTHER THAN THE FAILURE IN THE INFLIGHT CALIBRATION SYSTEM, THE EXPERIMENT PERFORMED NORMALLY UNTIL JANUARY 3, 1963, WHEN CONTACT WITH MARINER 2 WAS LOST.

DATA SET NAME- MAGNETIC FIELD COMPONENTS ON TAPE

NSSDC ID 62-041A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/29/62 TO 11/15/62

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BINARY TAPE, WRITTEN ON AN IBM 7094, AS SUBMITTED BY THE EXPERIMENTER. THE TAPE CONSISTS OF 367 PHYSICAL RECORDS, EACH CONTAINING 21 LOGICAL RECORDS. THERE IS ONE DATA POINT (LOGICAL RECORD) ON THE TAPE FOR EACH 36.96 SEC, EXCEPT DURING THE VENUS ENCOUNTER (DECEMBER 14, 1962) FOR WHICH THERE IS A DATA POINT EVERY 20.16 SEC. EACH DATA POINT CONTAINS THE TIME OF THE OBSERVATION (DAY, HR, MIN, AND SEC), THE HELIOCENTRIC RADIUS, SCALAR COLATITUDE, AND SOLAR LONGITUDE OF THE SPACECRAFT, THREE ORTHOGONAL COMPONENTS IN A QUASI-SOLAR EQUATORIAL COORDINATE SYSTEM, PLUS THE MAGNITUDE OF THE TOTAL FIELD AND AN INDICATION OF WHETHER AN INFLIGHT CALIBRATION IS OCCURRING. THE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM AUGUST 29, 1962, TO NOVEMBER 15, 1962.

DATA SET NAME- PLOTS OF MAGNETIC FIELD COMPONENTS ON MICROFILM

NSSDC ID 62-041A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/29/62 TO 10/31/62

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED AT NSSDC FROM HARD-COPY PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS 2 HR OF DATA WITH DATA POINTS PRESENTED EVERY 36.96 SEC, EXCEPT DURING THE VENUS ENCOUNTER (DECEMBER 14, 1962) FOR WHICH THERE IS A DATA POINT EVERY 20.16 SEC. THE PLOTS ON EACH FRAME, FROM TOP TO BOTTOM, GIVE APPROXIMATE PROJECTIONS OF THE MEASURED MAGNETIC FIELD ON THE SOLAR EQUATORIAL PLANE AND ON A PERPENDICULAR PLANE CONTAINING THE SUN DIRECTION. A THIRD GRAPH GIVES THE MEASURED MAGNETIC FIELD MAGNITUDE AND MARINER 2 PLASMA VELOCITY DATA SUPPLIED BY DR. M. NEUGEBAUER. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM AUGUST 29, 1962, TO OCTOBER 31, 1962.

EXPERIMENT NAME- SOLAR PLASMA ANALYZER

NSSDC ID 62-041A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- M.M. NEUGEBAUER, NASA-JPL, PASADENA, CALIF.  
C.W. SNYDER, NASA-JPL, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 12/30/62

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY THE FLUX AND ENERGY SPECTRUM OF THE POSITIVE ION COMPONENT OF THE SOLAR WIND PLASMA. THE EXPERIMENT CONSISTED OF A CYLINDRICAL ELECTROSTATIC ANALYZER WITH A FARADAY CUP DETECTOR. THIS SYSTEM SEPARATED POSITIVELY CHARGED IONS ACCORDING TO THEIR ENERGY PER UNIT CHARGE. THE ENTRANCE APERTURE WAS 5 SQ CM AND RECTANGULAR. THE APERTURE POINTED TO WITHIN 0.1 DEG OF THE SUN THROUGHOUT THE FLIGHT. THE VOLTAGE ON THE ANALYZER PLATES WAS CHANGED AT INTERVALS OF ABOUT 18 SEC IN AN ASCENDING SEQUENCE OF 10 VALUES FROM 231 V TO 8824 V. A ZERO CURRENT READING AND A CALIBRATION READING WERE THEN TAKEN. THE COMPLETE SEQUENCE OF 12 MEASUREMENTS WAS REPEATED EVERY 3.696 MIN (EVERY 2.016 MIN NEAR VENUS). THE INSTRUMENT FUNCTIONED NORMALLY OVER THE ENTIRE FLIGHT AND PROVIDED DATA ESSENTIALLY CONTINUOUSLY UNTIL DECEMBER 30, 1962.

DATA SET NAME- REDUCED ELECTROMETER NUMBERS AND TIME  
DATA ON MAGNETIC TAPE

NSSDC ID 62-041A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/29/62 TO 12/30/62

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ELECTROMETER OUTPUT NUMBERS (THESE ARE RELATED TO THE MEASURED CURRENT BY A SIMPLE EQUATION) AND TIME FOR EACH ENERGY PER CHARGE STEP. THE DATA ARE CONTAINED ON ONE 7-TRACK, 800-BPI, BINARY MAGNETIC TAPE IN A 7094 DCS FORMAT. A FORTRAN IV PROGRAM THAT READS AND PRINTS OUT THE TAPE IS AVAILABLE. THE DATA SET HAS A 90 PERCENT COVERAGE OF THE TIME PERIOD INDICATED.

DATA SET NAME- UNAVERAGED ANALYZED PLASMA PARAMETERS ON  
MAGNETIC TAPE

NSSDC ID 62-041A-06B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/29/62 TO 12/29/62

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA CONSIST OF TIME, UPPER AND LOWER LIMITS OF TEMPERATURE, UPPER AND LOWER LIMITS OF VELOCITY, DENSITY OF PROTONS, RATIO OF ALPHA PARTICLE DENSITY TO PROTON DENSITY, AND A PARAMETER THAT RATES THE VALIDITY OF THE MODEL USED IN THE ANALYSIS. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER FROM HER REDUCED DATA ON THE BASIS OF A CONVECTED ISOTROPIC MAXWELL-BOLTZMANN VELOCITY DISTRIBUTION. THIS ASSUMPTION WAS APPLIED TO THE PROTON PORTION OF EACH SPECTRUM AND EXTENDED TO THE ALPHA PARTICLE PORTION BY ASSUMING EITHER THAT THEIR TEMPERATURES WERE EQUAL OR THAT THE ALPHA PARTICLE TEMPERATURE WAS FOUR TIMES GREATER THAN THE PROTON TEMPERATURE. THE DATA ARE ON ONE 7-TRACK, 556-BPI, BINARY MAGNETIC TAPE. THE 7094 SYSTEM WAS USED IN PREPARING THE TAPE. DATA COVERAGE OVER THE TIME

PERIOD INDICATED WAS 90 PERCENT.

DATA SET NAME- ONE-HR AVERAGED PLASMA BULK VELOCITY  
DATA ON MAGNETIC TAPE

NSSDC ID 62-041A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/29/62 TO 12/30/62

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA CONSIST OF 1-HR AVERAGES OF PLASMA BULK VELOCITY COMPUTED BY THE EXPERIMENTER FROM HER UNAVERAGED PARAMETERS. WHERE UPPER AND LOWER LIMITS OF THE VELOCITY EXISTED, THE UPPER LIMIT WAS USED IN THE CALCULATION. THE DATA ARE CONTAINED IN ONE FILE ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE. DATA COVERAGE IS 90 PERCENT OVER THE TIME PERIOD INDICATED.

DATA SET NAME- THREE-HR AVERAGED PLASMA PARAMETER DATA  
ON MAGNETIC TAPE

NSSDC ID 62-041A-06D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/29/62 TO 12/29/62

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA CONSIST OF 3-HR AVERAGES OF UPPER AND LOWER LIMITS OF VELOCITY, UPPER AND LOWER LIMITS OF TEMPERATURE, DENSITY, RATIO OF ALPHA PARTICLE DENSITY TO PROTON DENSITY, AND A HIGH-ENERGY TAIL PARAMETER. ALSO INCLUDED FOR EACH OF THESE ARE THE NUMBER OF SPECTRA USED IN COMPUTING EACH OF THE AVERAGES AND TIME. THESE DATA WERE COMPUTED BY THE EXPERIMENTER FROM HER UNAVERAGED PARAMETERS. THE DATA ARE CONTAINED ON ONE FILE OF A 7-TRACK, 556-BPI, BCD MAGNETIC TAPE. THERE IS A 90 PERCENT DATA COVERAGE OVER THE TIME PERIOD INDICATED.

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SPACECRAFT NAME- ALOUETTE 1

NSSDC ID 62-049A

OTHER NAMES- 1962 BETA ALPHA 1, S 27, 62-049A

LAUNCH DATE- 09/29/62

DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- CRC-NASA

SPACECRAFT WEIGHT IN ORBIT- 145.7 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 10/07/62

ORBIT PERIOD- 105.4 MIN.

APOGEE- 1031. KM ALT

PERIGEE- 996. KM ALT

INCLINATION- 80.46 DEGREES

SPACECRAFT BRIEF DESCRIPTION

ALOUETTE 1 WAS A SMALL IONOSPHERIC OBSERVATORY INSTRUMENTED WITH AN

IONOSPHERIC SOUNDER, A VLF RECEIVER, AN ENERGETIC PARTICLE DETECTOR, AND A COSMIC NOISE EXPERIMENT. EXTENDED FROM THE SATELLITE SHELL WERE TWO DIPOLE ANTENNAS (45.7 AND 22.8 M LONG, RESPECTIVELY) WHICH WERE SHARED BY THREE OF THE EXPERIMENTS ON BOARD THE SPACECRAFT. THE SATELLITE WAS SPIN STABILIZED AT ABOUT 1.4 RPM AFTER ANTENNA EXTENSION. AFTER ABOUT 500 DAYS, THE SPIN SLOWED MORE RAPIDLY THAN EXPECTED TO ABOUT 0.6 RPM WHEN SATELLITE SPIN STABILIZATION FAILED. IT IS BELIEVED THAT THE SATELLITE GRADUALLY PROGRESSED TOWARD A GRAVITY GRADIENT STABILIZATION WITH THE LONGER ANTENNA POINTING EARTHWARD. ATTITUDE INFORMATION WAS DEDUCED ONLY FROM A SINGLE MAGNETOMETER AND TEMPERATURE MEASUREMENTS ON THE UPPER AND LOWER HEAT SHIELDS. (ATTITUDE DETERMINATION MAY BE IN ERROR BY AS MUCH AS 10 DEG.) THERE WAS NO TAPE RECORDER SO THAT DATA WERE AVAILABLE ONLY FROM THE VICINITY OF TELEMETRY STATIONS. TELEMETRY STATIONS WERE LOCATED TO PROVIDE PRIMARY DATA COVERAGE NEAR THE 80 DEG W MERIDIAN PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, ENGLAND, AND CENTRAL AFRICA. INITIALLY, DATA WERE RECORDED FOR ABOUT 6 HR PER DAY. AS OF JUNE 1971, OBSERVATIONS ARE BEING MADE FOR LESS THAN 1 HR PER DAY DUE TO DETERIORATION OF THE POWER SYSTEM.

DATA SET NAME- GSFC REFINED WORLD MAPS ON MICROFILM

NSSDC ID 62-049A-00B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/29/62 TO 03/01/70

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITION FOR EACH MINUTE OF GMT. POSITION IS DESCRIBED BY GEOGRAPHIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE AN ELLIPSOID OF REVOLUTION CLOSELY APPROXIMATING THE MEAN EARTH SURFACE. POSITION DATA FOR SPECIAL TIMES (EQUATOR CROSSING, THE NORTHERNMOST AND SOUTHERNMOST POINTS, AND SUN ENTRANCE AND EXIT) ARE ALSO LISTED. THE LISTINGS ARE ORGANIZED INTO 'BOOKS' OF ABOUT 2 WEEKS OF POSITION/TIME DATA HEADED BY ORBIT ELEMENTS AND CONSTANTS USED IN THE COMPUTATION OF THE POSITIONS. AS EXTENDED WORLD MAPS ARE PREPARED, THE REFINED MAPS DUPLICATING THIS INFORMATION ARE NORMALLY DISCARDED. HENCE, IF TIMES REQUIRED ARE NOT FOUND IN THIS DATA SET, SEE DATA SET 62-049A-00C. TIME COVERAGE OF DATA SET 62-049A-00B IS CONTINUOUS FROM LAUNCH TO JULY 1, 1964. SUBSEQUENT TIME COVERAGE IS NOT CONTINUOUS. THESE DATA ARE CONTAINED ON 24 REELS OF 16-MM MICROFILM (AS OF APRIL 1971).

DATA SET NAME- GSFC EXTENDED WORLD MAPS ON MICROFILM

NSSDC ID 62-049A-00C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/01/64 TO 12/06/70

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITION AND SUPPORTING INFORMATION FOR EACH MINUTE (EVERY 4 MIN AFTER SEPTEMBER 1970)

OF GMT. THE INFORMATION PROVIDED INCLUDES LOCAL TIME, GEODETIC LOCATION, SEVERAL VARIETIES OF MAGNETIC FIELD REFERENCED LOCATION, SUN POSITION, AND SPECIAL POINT IDENTIFICATION (EQUATOR CROSSING, NORTH OR SOUTH POINTS, SUNLIGHT EXIT OR ENTRANCE, AND OTHERS). THESE DATA ARE CONTAINED ON 86 REELS OF 35-MM MICROFILM (AS OF APRIL 1971). FOR ALQUETTE 1 EXTENDED MAP COVERAGE PRIOR TO JULY 1, 1964, SEE DATA SET 62-049A-00H.

DATA SET NAME- CRC INDEX OF EXPERIMENT 'DATA AVAILABLE'  
ON TAPE

NSSDC ID 62-049A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/01/66 TO 12/31/67

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED BY THE CANADIAN COMMUNICATIONS RESEARCH CENTRE IN OTTAWA, INDEX THE START AND STOP TIMES FOR THE OPERATION OF ALL FOUR SATELLITE EXPERIMENTS. THE INFORMATION PRESENTED INCLUDES TELEMETRY STATION, TELEMETRY TAPE IDENTIFICATION, DAY OF YEAR, START AND STOP TIMES FOR EACH EXPERIMENT, START AND STOP VALUES FOR EACH TELEMETRY STATION PASS OF GMT, DIP LATITUDE AND GYROFREQUENCY AT THE SATELLITE, LOCAL MEAN TIME, HEIGHT ABOVE THE SPHEROID, AND GEODETIC POSITION. THE DATA ARE ON TWO REELS OF 1/2-IN., 556-BPI, 7-TRACK, BCD MAGNETIC TAPE, ONE REEL FOR EACH YEAR.

DATA SET NAME- CRPL EXTENDED WORLD MAPS ON MICROFILM

NSSDC ID 62-049A-00H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/29/62 TO 06/30/64

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT CENTRAL RADIO PROPAGATION LABORATORIES (CRPL), BOULDER, COLORADO, ARE LISTINGS OF SATELLITE POSITION AND SUPPORTING INFORMATION FOR EACH IONOGRAM SCHEDULED FOR TRANSMISSION, I.E., FOR APPROXIMATELY EVERY 18 SEC DURING EACH TELEMETRY STATION PASS SCHEDULED FOR SATELLITE TRANSMISSION. ON JULY 1, 1964, RESPONSIBILITY FOR EXTENDED WORLD MAP PREPARATION WAS TRANSFERRED TO GSFC (REFERENCE DATA SET 62-049A-00C), AND A DIFFERENT COMPUTATIONAL PROCEDURE AND FORMAT WAS ADOPTED. THE CRPL MAPS INCLUDE, FOR THE SATELLITE POSITION, THE LOCAL MEAN SOLAR TIME, GEODETIC LOCATION, GYROFREQUENCY, DIP, GEOMAGNETIC LATITUDE, AND SOLAR ZENITH ANGLE. FOR GROUND-BASED IONOSonde STATIONS WITHIN 500 KM OF THE SUBSATELLITE LOCATION, STATION INFORMATION IS ALSO LISTED. THE DATA ARE CONTAINED ON SIXTEEN 100-FT REELS OF 16-MM MICROFILM.

DATA SET NAME- CRC PUBLISHED INDEX OF EXPERIMENT 'DATA  
AVAILABLE'

NSSDC ID 62-049A-001

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 01/01/66 TO 12/31/67

DATA SET BRIEF DESCRIPTION

THESE DATA INDEX THE START AND STOP TIMES FOR THE OPERATION OF ALL FOUR SATELLITE EXPERIMENTS. THE INFORMATION PRESENTED INCLUDES TELEMETRY STATION, TELEMETRY TAPE IDENTIFICATION, DAY OF YEAR, START AND STOP TIMES FOR EACH EXPERIMENT, START AND STOP VALUES FOR EACH PASS OF GMT, LOCAL MEAN TIME, HEIGHT ABOVE THE SPHEROID, DIP LATITUDE AND GYROFREQUENCY AT THE SATELLITE, AND GEODETIC POSITION. THE DATA ARE IN TWO VOLUMES (ONE PER YEAR) ENTITLED 'ALOUETTE 1 DATA AVAILABLE,' PUBLISHED BY THE DEPARTMENT OF COMMUNICATIONS, COMMUNICATIONS RESEARCH CENTRE, OTTAWA, CANADA. IF THESE REPORTS CANNOT BE OBTAINED FROM THE ORIGINAL SOURCE, NSSDC WILL TRY TO PROVIDE THE DATA. THESE SAME DATA ARE ON TAPE AS DATA SET 62-049A-00G.

EXPERIMENT NAME- SWEEP FREQUENCY TOPSIDE IONOSONDE

NSSDC ID 62-049A-01

ORIGINAL EXPERIMENT INSTITUTION- DRTE

INVESTIGATORS- G.L. NELMS, COMM RESEARCH CENTRE , OTTAWA, ONTARIO, CANADA  
J.E. JACKSON, NASA-GSFC , GREENBELT, MD.  
L. COLIN, NASA-ARC , MOFFETT FIELD, CALIF.  
J.W. KING, RSRs , SLOUGH, BUCKS, ENGLAND  
R.W. KNECHT, NOAA , BOULDER, COLO.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE SWEEP FREQUENCY IONOSONDE WAS A RADIO TRANSMITTER-RECEIVER THAT RECORDED THE TIME DELAY BETWEEN A TRANSMITTED AND RETURNED RADIO PULSE. A CONTINUUM OF FREQUENCIES BETWEEN .5 AND 12 MHZ WERE SAMPLED ONCE EVERY 18 SEC. SEVERAL DELAY TIMES WERE USUALLY OBSERVED FOR EACH FREQUENCY DUE TO GROUND REFLECTIONS, PLASMA RESONANCES, BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, ETC. DELAY TIME WAS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE PROPAGATION PATH, AND THE MODE OF PROPAGATION. THE STANDARD DATA FORM WAS AN IONOGRAM (GRAPH) SHOWING TIME (VIRTUAL DISTANCE OF SIGNAL REFLECTION FROM THE SATELLITE) VS RADIO FREQUENCY. TWO OTHER COMMON FORMS OF DATA WERE PREPARED FROM THE IONOGRAMS. THEY WERE (1) DIGITAL FREQUENCY DATA AND/OR VIRTUAL HEIGHT VALUES OF CHARACTERISTIC IONOSPHERIC FEATURES AND (2) COMPUTATIONS OF ELECTRON DENSITY PROFILES. PERFORMANCE HAS FAR EXCEEDED THAT EXPECTED.

INITIALLY, OBSERVATIONS WERE RECORDED FOR ABOUT 6 HR PER DAY. AS OF 1971, LESS THAN 1 HR PER DAY OF GOOD QUALITY IONOGRAMS ARE BEING RECORDED. AN INDEX OF OPERATION TIMES AND LOCATIONS FOR THIS EXPERIMENT IS AVAILABLE IN DATA SETS 62-049A-00G AND 62-049A-00I.

DATA SET NAME- SWEEP FREQUENCY REDUCED IONOGRAMS ON  
MICROFILM

NSSDC ID 62-049A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/62 TO 11/18/69

DATA SET BRIEF DESCRIPTION

THESE IONOGRAMS ARE REDUCED DATA PLOTS ON 35-MM MICROFILM SHOWING FREQUENCY VS ECHO TIME DELAY (VIRTUAL RANGE) OF PULSED RADIO SIGNALS. THEY ARE AN ORIGINAL FORM OF THE DATA PREPARED DIRECTLY FROM THE TELEMETRY TAPE. THE DATA ARE AS COMPLETE AS PERMITTED BY THE LIMITATIONS OF SPACECRAFT POWER, LACK OF ONBOARD TAPE RECORDING (TELEMETRY STATION LOCATION, TELEMETRY STATION SCHEDULING, ETC.), AND DATA PROCESSING FACILITIES. DATA EXIST FROM SEPTEMBER 29, 1962, AND ARE STILL BEING RECORDED. PROCESSING LIMITATIONS RESULT IN A DELAY OF ABOUT 1 YR FROM OBSERVATION TIME TO IONOGRAM PREPARATION. AN ADDED DELAY FOR EXPERIMENTER PROPRIETARY USE RESULTS IN A TOTAL DELAY OF ABOUT 2 YR FROM OBSERVATION TIME TO GENERAL AVAILABILITY OF THE IONOGRAM TO THE PUBLIC. THE DATA COVERAGE IS PRIMARILY NEAR THE 80 DEG W MERIDIAN FOR PERIODS OF TIME UP TO 7 HR PER DAY. MORE THAN 4500 REELS (100 FT PER REEL) OF MICROFILMED IONOGRAMS ARE AVAILABLE AT NSSDC. SINCE ONLY TIME IS NOTED ON EACH IONOGRAM, POSITION AND OTHER RELATED DATA MUST BE OBTAINED FROM WORLD MAPS. (SEE DATA SETS INCLUDED UNDER 62-049A-00.) A PROGRAM FOR THE REDUCTION OF TOPSIDE IONOGRAMS TO ELECTRON DENSITY IS AVAILABLE FROM NSSDC.

DATA SET NAME- ALOUETTE SYNOPTIC (ALOSYN) SCALED DATA  
ON MICROFILM

NSSDC ID 62-049A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/62 TO 08/31/64

DATA SET BRIEF DESCRIPTION

THESE ALOSYN DATA ARE SCALED DATA ON NINE REELS OF 35-MM MICROFILM. THEY ARE TABULATIONS OF SELECTED IONOSPHERIC PARAMETERS WHICH WERE READ (SCALED) FROM THE IONOGRAM AND, IN SOME CASES, ALSO CALCULATED FROM OTHER SCALED VALUES. FOUR PARAMETERS ARE PRESENTED -- (1) PLASMA FREQUENCY AT THE SATELLITE, (2) PLASMA FREQUENCY AT THE F2 MAXIMUM, (3) MAXIMUM FREQUENCY OF OBSERVED SPORADIC E, AND (4) STRENGTH OF GROUND ECHOES. SUPPORTING INFORMATION INCLUDES SATELLITE LOCAL TIME, LOCATION (INCLUDING DIP), SOLAR ZENITH ANGLE AT THE SATELLITE, KP, AND QUALITY AND ACCURACY NOTATIONS FOR SOME OF THE SCALINGS. THE MICROFILM WAS PREPARED BY CHRONOLOGICALLY SORTING AND LISTING THE ALOSYN TAPES (62-049A-01C). ONLY ABOUT 1/4 OF THE ALOUETTE IONOGRAMS HAVE BEEN SCALED, BUT IT IS PLANNED THAT, EVENTUALLY, A MAJOR



PORTION OF THEM WILL BE SCALED. THIS TYPE OF DATA IS ALSO AVAILABLE IN  
HARD-COPY FORM (62-049A-01K).

DATA SET NAME- ALOUETTE SYNOPTIC (ALOSYN) SCALED DATA  
ON TAPE

NSSDC ID 62-049A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/62 TO 08/31/64

DATA SET BRIEF DESCRIPTION

THESE ALOSYN DATA ARE SCALED DATA ON THREE 7-TRACK, ONE-FILE, 556-BPI, BCD MAGNETIC TAPES PRODUCED ON AN IBM 7094 CCMPUTER. THEY ARE TABULATIONS OF SELECTED IONOSPHERIC PARAMETERS WHICH WERE READ (SCALED) FROM THE IONOGRAM AND, IN SOME CASES, CALCULATED FROM OTHER SCALED VALUES. FOUR PARAMETERS ARE PRESENTED -- (1) PLASMA FREQUENCY AT THE SATELLITE, (2) PLASMA FREQUENCY AT THE F2 MAXIMUM, (3) MAXIMUM FREQUENCY OF OBSERVED SPORADIC E, AND (4) STRENGTH OF GROUND ECHOES. SUPPORTING INFORMATION INCLUDES SATELLITE LOCAL TIME, LOCATION (INCLUDING DIP), SOLAR ZENITH ANGLE AT THE SATELLITE, KP, AND QUALITY AND ACCURACY NOTATIONS FOR SOME OF THE SCALINGS. ONLY ABOUT 1/4 OF THE ALOUETTE 1 IONOGRAMS HAVE BEEN SCALED, BUT IT IS PLANNED THAT, EVENTUALLY, A MAJOR PORTION OF THEM WILL BE SCALED.

DATA SET NAME- RSR5 ELECTRON DENSITY VALUES AT 10-KM  
INTERVALS IN BOCK5

NSSDC ID 62-049A-01E

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/26/62 TO 07/31/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ELECTRON DENSITY PROFILES, COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT, WHICH HAVE IN TURN BEEN SCALED FROM THE IONOGRAMS. THESE DATA ARE ANALYZED DATA IN THREE BOUND VOLUMES THAT HAVE BEEN PREPARED FROM COMPTER PRINTOUT. VOLUMES 1 AND 3 CONTAIN PROFILES OF EIGHT PASSES (254 PROFILES) OVER SINGAPORE, AND VOLUME 2 CONTAINS PROFILES OF FOUR PASSES (123 PROFILES) OVER PT. STANLEY, FALKLAND ISLANDS. THERE ARE LISTINGS OF ELECTRON DENSITIES FOR REAL GEOMETRIC HEIGHTS ABOVE THE ELLIPSOID AT 10-KM INTERVALS AND PLOTS (INCLUDING DIGITAL VALUES) OF GEOPOTENTIAL HEIGHT VS ELECTRON DENSITY FOR EACH 20 KM. THESE ARE ONLY A VERY SMALL SAMPLE OF THE TOTAL DATA OBSERVED. THESE DATA WERE PUBLISHED BY DSIR, RADIO AND SPACE RESEARCH STATION, SLOUGH, BUCKS, U.K., AND TITLED 'HEIGHT DISTRIBUTION OF ELECTRON CONCENTRATION IN THE TOPSIDE IONOSPHERE AS DEDUCED FROM TOPSIDE SOUNDER SATELLITE IONOGRAMS.' IF THESE REPORTS ARE NO LONGER AVAILABLE FROM THE ORIGINAL SOURCE, NSSDC WILL TRY TO PROVIDE COPIES OF THEM.

DATA SET NAME- CRC ELECTRON DENSITY VALUES AT LAMINA  
BOUNDARIES IN BOOKS

NSSDC ID 62-049A-01F

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S).

TIME SPAN OF DATA- 05/30/62 TO 07/28/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ANALYZED ELECTRON DENSITY PROFILES COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT THAT WERE SCALED FROM IONOGRAMS. THESE ARE ANALYZED DATA IN 10 BOUND BOOKS THAT WERE PREPARED BY THE DEFENSE RESEARCH BOARD, TELECOMMUNICATIONS ESTABLISHMENT (NOW CRC) IN OTTAWA, CANADA. WITHIN EACH VOLUME (TWO BOOKS PER VOLUME), THE DATA ARE ORDERED CHRONOLOGICALLY, BUT TIME COVERAGE FOR DIFFERENT VOLUMES IS OVERLAPPING. TELEMETRY STATIONS ARE NOT IDENTIFIED, BUT SATELLITE LOCATION, TIME OF OBSERVATION, SOLAR ZENITH ANGLE AT THE SATELLITE, DIP LATITUDE AT THE SATELLITE, TOTAL ELECTRON CONTENT DOWN TO ALTITUDE OF HIGHEST IONOSPHERICALLY REFLECTED FREQUENCY, AND OTHER RELEVANT INFORMATION ARE LISTED FOR EACH PROFILE. PROFILE DATA CONSIST OF ELECTRON DENSITY AND REAL HEIGHT VALUES FOR EACH POINT SCALED FROM THE IONOGRAM. FOR INTERPOLATED VALUES OF ELECTRON DENSITY AT STANDARD INCREMENTS OF REAL HEIGHT, SEE DATA SET 62-049A-01L. EACH PROFILE OCCUPIES ABOUT FOUR LINES OF PRINT, AND A CHRONOLOGICAL INDEX OF ALL DATA FROM ALL VOLUMES APPEARS IN THE FRONT OF EACH BOOK. THE 1833 IONOGRAMS REDUCED WERE SELECTED FOR THEIR SCIENTIFIC INTEREST AND COVER TIMES FROM SEPTEMBER 30, 1962, TO JULY 28, 1968. THESE REDUCTIONS ARE FROM LESS THAN 0.2 PERCENT OF THE TOTAL OF OVER 1 MILLION ALOUETTE 1 IONOGRAMS OBSERVED. DATA FOR MOST LATITUDES ARE INCLUDED, BUT THOSE DATA FROM LONGITUDES NEAR 80 DEG W ARE MORE NUMEROUS THAN THOSE FROM OTHER LONGITUDES. THE BOOKS ARE TITLED 'ALOUETTE 1 IONOSPHERIC DATA N(H)'. IF THEY ARE NO LONGER AVAILABLE FROM THE ORIGINAL SOURCE, NSSDC WILL TRY TO PROVIDE COPIES.

DATA SET NAME- NASA-ARC ELECTRON DENSITY VALUES AT  
50-KM INTERVALS IN BOOKS

NSSDC ID 62-049A-01H

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/01/62 TO 01/28/64

DATA SET BRIEF DESCRIPTION

THESE DATA WERE COMPUTED FROM DIGITAL VALUES THAT WERE SCALED FROM IONOGRAMS. THEY ARE ANALYZED DATA IN SIX PUBLISHED BOOKS PREPARED FROM COMPUTER PRINTOUT. THE SIX VOLUMES INCLUDE DIGITAL ELECTRON DENSITY VALUES AT THE SATELLITE AND FOR EACH 50 KM FROM 1000-KM ALTITUDE DOWN TO THE LOWEST HEIGHT OF SIGNAL REFLECTION (NORMALLY IN THE TOPSIDE IONOSPHERE NEAR THE F2 MAXIMUM). PLASMA SCALE HEIGHTS ARE TABULATED FOR EACH 50 KM FROM 950 KM DOWN TO THE LOWEST REFLECTION HEIGHT. TOTAL ELECTRON CONTENT FROM LOWEST REFLECTION TO 1000 KM IS ALSO INCLUDED. SUPPORTING INFORMATION INCLUDES LOCATION, TIME, MAGNETIC DIP, INVARIANT LATITUDE, L-SHELL, KP, SUNLIGHT OCCURRENCE AT SATELLITE, AND IONOGRAM QUALITY. MACHINE PLOTTED DATA SUMMARY

GRAPHS ARE INCLUDED WITH THE DATA TABULATIONS. THE AREAS COVERED ARE HAWAII AND THE AMERICAN CONTINENTS. DATA ARE TABULATED FOR 14,635 IONOGRAMS OBSERVED FROM NOVEMBER 1962 THROUGH JANUARY 1964. THESE PUBLICATIONS ARE AVAILABLE FROM THE US GOVERNMENT PRINTING OFFICE (AS NASA SP-3026, 3038, 3027, 3032, 3033, AND 3034) OR FROM THE NATIONAL TECHNICAL INFORMATION SERVICE (AS N66-27056, N67-16548, N66-33197, N66-38867, N67-14933, AND N67-36446). IF DIFFICULTY IS ENCOUNTERED IN OBTAINING THESE DATA, NSSDC WILL TRY TO PROVIDE THE DATA REQUIRED.

DATA SET NAME- NASA-ARC ELECTRON DENSITY VALUES AT  
100-KM INTERVALS ON MAGNETIC TAPE

NSSDC ID 62-049A-011

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/01/62 TO 01/28/64

#### DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA ON MAGNETIC TAPE WERE COMPUTED FROM DIGITAL VALUES SCALED FROM IONOGRAMS. SELECTION WAS ONLY IN ORDER TO OBTAIN A REPRESENTATIVE LISTING OF OBSERVATIONS FOR THE TIME PERIOD AND LOCATIONS NOTED. DIGITAL ELECTRON DENSITY VALUES ARE LISTED AT THE SATELLITE AND FOR EACH 100 KM FROM 1000-KM ALTITUDE DOWN TO THE LOWEST HEIGHT OF SIGNAL REFLECTION (NORMALLY IN THE TOPSIDE IONOSPHERE NEAR THE F2 MAXIMUM). SCALE HEIGHTS AT 900, 700, AND 500 KM ARE LISTED ALONG WITH LOCAL TIME AND SATELLITE LOCATIONS. ABOUT 15,000 PROFILES ARE PRESENTED. THESE ARE A VERY SMALL PORTION (LESS THAN 0.1 PERCENT) OF THE IONOGRAMS OBSERVED BY ALOUETTE 1. DATA WERE RECORDED ON AN IBM 7094 COMPUTER ON A 7-TRACK BCD TAPE IN THREE FILES AT 556 BPI. THE AREAS COVERED ARE HAWAII AND THE AMERICAN CONTINENTS FROM NOVEMBER 1962 THROUGH JANUARY 1964.

DATA SET NAME- NASA-ARC ELECTRON DENSITY VALUES AT  
50-KM INTERVALS ON MICROFICHE

NSSDC ID 62-049A-01J

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/01/62 TO 01/28/64

#### DATA SET BRIEF DESCRIPTION

THESE DATA WERE COMPUTED FROM DIGITAL VALUES THAT WERE SCALED FROM IONOGRAMS. THEY ARE ANALYZED DATA COPIED ONTO MICROFICHE FROM THREE PUBLISHED BOOKS. THE BOOKS (NASA-SP-3026, SP-3027, AND SP-3032) WERE PREPARED FROM COMPUTER PRINTOUT. THE DATA INCLUDE ELECTRON DENSITY VALUES AT THE SATELLITE AND FOR EACH 50 KM FROM 1000-KM ALTITUDE DOWN TO THE LOWEST HEIGHT OF SIGNAL REFLECTION (NORMALLY IN THE TOPSIDE IONOSPHERE NEAR THE F2 MAXIMUM). PLASMA SCALE HEIGHTS ARE TABULATED FOR EACH 50 KM FROM 950-KM ALTITUDE DOWN TO THE ALTITUDE OF THE LOWEST REFLECTION. TOTAL ELECTRON CONTENT FROM THE LOWEST REFLECTION UP TO 1000-KM ALTITUDE IS ALSO INCLUDED. SUPPORTING INFORMATION INCLUDES LOCATION, TIME, MAGNETIC DIP, INVARIANT LATITUDE, L-SHELL, KP, SUNLIGHT OCCURRENCE AT THE SATELLITE, AND IONOGRAM QUALITY. MACHINE PLOTTED DATA SUMMARY GRAPHS ARE INCLUDED. THE

AREAS COVERED ARE HAWAII AND THE AMERICAN CONTINENTS. DATA ARE TABULATED FOR 9695 IONOGRAMS FROM NOVEMBER 1962 THROUGH JANUARY 1964.

DATA SET NAME- ALOUETTE SYNOPTIC (ALOSYN) SCALED DATA

NSSDC ID 62-049A-01K

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 05/29/62 TO 10/31/68

DATA SET BRIEF DESCRIPTION

THESE ALOSYN DATA ARE AVAILABLE IN PUBLISHED FORM AND CONSIST OF TABULATIONS OF SELECTED IONOSPHERIC PARAMETERS THAT WERE READ (SCALED) FROM THE IONOGRAM AND, IN SOME CASES, ALSO CALCULATED FROM OTHER SCALED VALUES. FOUR PARAMETERS ARE PRESENTED -- (1) PLASMA FREQUENCY AT THE SATELLITE, (2) PLASMA FREQUENCY AT THE F2 MAXIMUM, (3) MAXIMUM FREQUENCY OF OBSERVED SPORADIC E, AND (4) STRENGTH OF GROUND ECHOES. SUPPORTING INFORMATION INCLUDES SATELLITE LOCAL TIME, LOCATION (INCLUDING DIP), SOLAR ZENITH ANGLE AT THE SATELLITE, KP, AND QUALITY AND ACCURACY NOTATIONS FOR SOME OF THE SCALINGS. ONLY 1/4 OF THE ALOUETTE 1 IONOGRAMS HAVE BEEN SCALED, BUT IT IS PLANNED THAT, EVENTUALLY, A MAJOR PORTION OF THEM WILL BE SCALED. ALL LISTINGS ARE CHRONOLOGICALLY SORTED AND CONTAIN DATA FROM MORE THAN 12 STATIONS. AN INDEX BY PASS APPEARS AT THE FRONT OF EACH BOOK, AND EACH BOOK CONTAINS DATA FOR 2 WEEKS OR MORE. DATA ARE QUITE COMPLETE FOR THE STATIONS CONSIDERED UP THROUGH JANUARY 15, 1965, BUT LITTLE DATA ARE PRESENTLY AVAILABLE FOR SUBSEQUENT DATES. THE BOOKS, PUBLISHED BY THE DEPARTMENT OF COMMUNICATIONS, COMMUNICATIONS RESEARCH CENTRE (FORMERLY DRTE), OTTAWA, CANADA, ARE TITLED 'ALOUETTE 1 IONOSPHERIC DATA ALOSYN.' THESE DATA ARE ALSO AVAILABLE ON TAPE (69-049A-01C) AND MICROFILM (69-049A-01B). IF THE BOOKS ARE NO LONGER AVAILABLE FROM THE ORIGINAL SOURCE, NSSDC WILL TRY TO PROVIDE COPIES OF THEM.

DATA SET NAME- CRC ELECTRON DENSITY VALUES AT 50-KM  
INTERVALS IN BOOKS

NSSDC ID 62-049A-01L

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 05/30/62 TO 07/28/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ELECTRON DENSITY PROFILES COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT THAT WERE SCALED FROM IONOGRAMS. THESE ARE ANALYZED DATA IN FIVE BOUND BOOKS THAT WERE PREPARED BY THE DEFENSE RESEARCH BOARD, TELECOMMUNICATIONS ESTABLISHMENT (NOW CRC) IN OTTAWA, CANADA. WITHIN EACH VOLUME, DATA ARE ORDERED CHRONOLOGICALLY. TELEMETRY STATIONS ARE NOT IDENTIFIED, BUT SATELLITE LOCATION, UT OF OBSERVATION, SATELLITE LOCAL TIME, DIP LATITUDE AT THE SATELLITE, AND OTHER RELEVANT INFORMATION ARE LISTED FOR EACH PROFILE. PROFILE DATA CONSIST OF ELECTRON DENSITY AND REAL HEIGHT VALUES FOR EACH 50 KM FROM 1000 KM DOWN TO THE LOWEST HEIGHT FROM WHICH IONOSPHERIC REFLECTIONS WERE OBSERVED (NO

LOWER THAN 250 KM). FOR VALUES AT POINTS FROM WHICH INTERPOLATIONS WERE MADE, SEE DATA SET 62-049A-01F. TWENTY-FOUR PROFILES ARE LISTED ON EACH PAGE. A CUMULATIVE CHRONOLOGICAL INDEX OF ALL DATA AVAILABLE AT PUBLISHING DATE APPEARS IN THE FRONT OF EACH BOOK. THE 1833 IONOGRAMS REDUCED WERE SELECTED FOR THEIR SCIENTIFIC INTEREST AND COVER TIMES FROM SEPTEMBER 30, 1962, TO JULY 28, 1968. THESE REDUCTIONS ARE FROM LESS THAN 0.2 PERCENT OF THE TOTAL OF OVER 1 MILLION ALOUETTE 1 IONOGRAMS OBSERVED. MOST LATITUDES ARE INCLUDED, BUT DATA FROM LONGITUDES NEAR 80 DEG W ARE MORE NUMEROUS THAN FROM OTHER LONGITUDES. THESE BOOKS ARE TITLED 'ALOUETTE 1 IONOSPHERIC DATA INTERPOLATED N(H)'. IF THEY ARE NO LONGER AVAILABLE FROM THE ORIGINAL SOURCE, NSSDC WILL TRY TO PROVIDE COPIES.

DATA SET NAME- CRC ELECTRON DENSITY PROFILES AT LAMINA  
BOUNDARIES ON TAPE

NSSDC ID 62-049A-01M

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/22/63 TO 07/28/68

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA CONSIST OF ELECTRON DENSITY PROFILES, COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT, WHICH HAVE IN TURN BEEN SCALED FROM THE IONOGRAMS. PROFILES WERE SELECTED BECAUSE OF THEIR SCIENTIFIC INTEREST. TELEMETRY STATIONS ARE NOT IDENTIFIED, BUT SATELLITE LOCATION, TIME OF OBSERVATION, SOLAR ZENITH ANGLE AT THE SATELLITE, DIP AT THE SATELLITE, TOTAL CONTENT DOWN TO THE ALTITUDE OF HIGHEST IONOSPHERICALLY REFLECTED FREQUENCY, AND OTHER RELEVANT INFORMATION ARE LISTED FOR EACH PROFILE. VALUES OF ELECTRON DENSITY INTERPOLATED FOR STANDARD 50-KM INCREMENTS OF GEOMETRIC HEIGHT HAVE BEEN PREPARED FROM THIS DATA SET AND ARE AVAILABLE AS DATA SET 62-049A-01L. THIS DATA SET CONSISTS OF ONE TAPE INCLUDING CHRONOLOGICALLY ORDERED OBSERVATIONS FROM JANUARY 22, 1963, TO JULY 28, 1968. THIS PROVIDES ABOUT 300 PROFILES. THE FORMAT GIVES SEQUENCES OF NUMBERS FOR EACH POINT SCALED FROM THE IONOGRAM. THESE SEQUENCES INCLUDE ELECTRON DENSITY AT THE POINT AND ONE OR MORE COEFFICIENTS FROM WHICH GEOMETRIC HEIGHTS CAN BE CALCULATED. THESE DATA MAKE UP A VERY SMALL PORTION OF THE RECORDED ALOUETTE 1 IONOGRAMS. LATITUDINAL COVERAGE IS WIDESPREAD, BUT DATA AT LONGITUDES NEAR 80 DEG W ARE MORE NUMEROUS THAN OTHERS. DATA WERE RECORDED ON AN IBM 7094 COMPUTER ON 7-TRACK BCD TAPE IN ONE FILE AT 556 BPI.

DATA SET NAME- CRC ELECTRON DENSITY PROFILES AT 50-KM  
INTERVALS ON TAPE

NSSDC ID 62-049A-01N

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/29/62 TO 03/30/66

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA CONSIST OF ELECTRON DENSITY PROFILES, COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT, WHICH HAVE IN TURN BEEN

SCALED FROM THE IONOGRAMS. TELEMETRY STATIONS ARE NOT IDENTIFIED, BUT SATELLITE LOCATION, TIME OF OBSERVATION, SOLAR ZENITH ANGLE AT THE SATELLITE, DIP AT THE SATELLITE, TOTAL CONTENT DOWN TO THE ALTITUDE OF THE HIGHEST IONOSPHERICALLY REFLECTED FREQUENCY, AND OTHER RELEVANT INFORMATION ARE LISTED FOR EACH PROFILE. VALUES OF ELECTRON DENSITY INTERPOLATED FOR STANDARD 50-KM INCREMENTS OF GEOMETRIC HEIGHT HAVE BEEN PREPARED FROM THIS DATA SET AND ARE AVAILABLE AS DATA SET 62-049A-01L. THIS DATA SET CONSISTS OF THREE TAPES INCLUDING CHRONOLOGICALLY ORDERED OBSERVATIONS FROM SEPTEMBER 29, 1962, TO MARCH 30, 1966. THIS PROVIDES ABOUT 1400 PROFILES. THE FORMAT GIVES PAIRS OF ELECTRON DENSITY AND REAL HEIGHT VALUES FOR EACH POINT SCALED FROM THE IONOGRAM. THESE DATA MAKE UP A VERY SMALL PORTION OF THE RECORDED ALOUETTE 1 IONOGRAMS. LATITUDINAL COVERAGE IS WIDESPREAD, BUT DATA AT LONGITUDES NEAR 80 DEG W ARE MORE NUMEROUS THAN OTHERS. DATA WERE RECORDED ON AN IBM 7094 COMPUTER ON 7-TRACK BCD TAPE IN CNE FILE AT 556 BPI.

DATA SET NAME- IONOGRAM INVENTORY ON TAPE

NSSDC ID 62-049A-010

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/29/62 TO 08/20/69

DATA SET BRIEF DESCRIPTION

THIS FILE INDEXES THE ALOUETTE 1 IONOGRAMS (DATA SET 62-049A-01A) BY STATION PASS. INFORMATION IN THE DATA SET FOR WHICH IONOGRAMS CAN BE IDENTIFIED INCLUDES TELEMETRY STATION, START AND STOP TIME FOR THE PASS, AND ORBIT NUMBER. THE INDEX, WHICH IS PREPARED FROM A PHYSICAL INVENTORY OF FILM RECEIVED AND SATELLITE EPHEMERIDES, IS MAINTAINED ON ONE 556-BPI, 7-TRACK, BCD MAGNETIC TAPE AND IS UPDATED MONTHLY UNLESS LITTLE DATA ARE RECEIVED. THE TIME SPAN OF DATA IS CURRENT AS OF MARCH 1971.

DATA SET NAME- UCLA INTERPOLATED ELECTRON DENSITY  
PROFILES AT 25-KM INTERVALS ON TAPE

NSSDC ID 62-049A-01P

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/30/62 TO 05/03/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ANALYZED ELECTRON DENSITY PROFILES COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT THAT WERE SCALED FROM IONOGRAMS. THESE ARE ANALYZED DATA ON TAPES THAT WERE PREPARED BY THE UCLA DEPARTMENT OF METEOROLOGY. SATELLITE LOCATION, SATELLITE HEIGHT, AND TIME (UT) OF OBSERVATION ARE LISTED FOR EACH PROFILE. FOR MANY PROFILES THE EXTRAPOLATED F<sub>X</sub>F<sub>2</sub> AND ITS REAL HEIGHT ARE INCLUDED. PROFILE INTERVALS ARE LISTED FOR EACH 25N-KM ALTITUDE OF REAL HEIGHT (N IS AN INTEGER), WHERE 25N RANGES FROM THE CLOSEST VALUE ABOVE THE REFLECTION ALTITUDE OF THE HIGHEST X TRACE FREQUENCY REFLECTED AND THE CLOSEST VALUE BELOW SATELLITE ALTITUDE. ELECTRON DENSITY IS ALSO PROVIDED AT SATELLITE ALTITUDE. THIS DATA SET

CONSISTS OF TWO TAPES THAT INCLUDE CHRONOLOGICALLY ORDERED OBSERVATIONS FROM SEPTEMBER 30, 1962, TO MAY 3, 1964, PROVIDING ABOUT 43,781 PROFILES. THE TAPES ARE IBM 360, BINARY, 7 TRACK WRITTEN AT 800 BPI.

EXPERIMENT NAME- COSMIC PARTICLE DETECTOR

NSSDC ID 62-049A-02

ORIGINAL EXPERIMENT INSTITUTION- NATIONAL RSCH COUNCIL

INVESTIGATORS- I.B. MCDIARMID, NATIONAL RSCH COUNCIL, OTTAWA, ONTARIO, CANADA

DATE LAST USEFUL DATA RECORDED- 01/29/68

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF SIX DETECTORS WHOSE OBJECTIVES WERE TO DETERMINE THE INTENSITY STRUCTURE OF THE LOWER PORTION OF THE OUTER VAN ALLEN RADIATION BELT AT HIGH LATITUDES AND MEASURE INTENSITY CHANGES ASSOCIATED WITH SOLAR AND GEOPHYSICAL PHENOMENA, PARTICULARLY AURORA. THE FIRST, AN ANTON 302 GEIGER COUNTER, WAS IN A SHIELDED PART OF THE PACKAGE AND WAS USED ONLY FOR OMNIDIRECTIONAL MEASUREMENTS OF PROTONS AND ELECTRONS WITH ENERGIES GREATER THAN 33 AND 2.8 MEV, RESPECTIVELY. AN ANTON 223 GEIGER COUNTER, WHICH POINTED 10 DEG OFF THE SPACECRAFT SPIN AXIS, RESPONDED DIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 40 AND 500 KEV, RESPECTIVELY. A SECOND ANTON 223 GEIGER COUNTER, POINTED PARALLEL TO THE SPACECRAFT SPIN AXIS AND COUPLED TO A MAGNETIC BROOM, RESPONDED DIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 250 AND 500 KEV. OMNIDIRECTIONALLY, BOTH GEIGER COUNTERS RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 2.8 AND 33 MEV, RESPECTIVELY. THE FOURTH DETECTOR, A SILICON JUNCTION, WAS COLLIMATED TO LOOK 10 DEG OFF THE SPIN AXIS. DIRECTIONALLY, IT RESPONDED TO PROTONS AND ALPHA PARTICLES IN THE ENERGY RANGES 1.3 TO 7 AND 4.3 TO 28 MEV, RESPECTIVELY. OMNIDIRECTIONALLY, THE SILICON JUNCTION RESPONDED TO PROTONS IN THE ENERGY RANGE 55 TO 60 MEV. THE LAST TWO DETECTORS, A GEIGER TELESCOPE CONSISTING OF TWO TRAYS OF PHILIPS 18509 GEIGER COUNTERS AND A PLASTIC SCINTILLATOR LOCATED BETWEEN THE TWO GEIGER COUNTER TRAYS OF THE TELESCOPE, WERE POINTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THESE DETECTORS HAD ONLY DIRECTIONAL RESPONSES TO PROTONS AND ALPHA PARTICLES WITH ENERGIES GREATER THAN 100 AND 400 MEV, RESPECTIVELY. THIS EXPERIMENT PERFORMED WELL INITIALLY AND WAS TURNED OFF ON JANUARY 29, 1968, THOUGH STILL PERFORMING NORMALLY. AN INDEX OF OPERATION TIMES AND LOCATIONS FOR THIS EXPERIMENT IS AVAILABLE IN DATA SETS 62-049A-006 AND 62-049A-001.

DATA SET NAME- TEN-SEC AVERAGED COUNT RATES ON TAPE

NSSDC ID 62-049A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/29/62 TO 03/26/64

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO 9-TRACK, 800-BPI, EBCDIC, UNBLOCKED TAPES

GENERATED BY THE EXPERIMENTER. EACH RECORD CONTAINS 6500 CHARACTERS. THE FIRST 20 CHARACTERS ARE USED FOR PASS IDENTIFICATION AND CONTAIN THE RECEIVING STATION NAME, PASS NUMBER, NUMBER OF 10-SEC AVERAGES IN THE PASS, 3-HR AND DAILY KP VALUES, UNIVERSAL TIME AT THE MIDPOINT OF THE ASCENDING (NORTHBOUND) NODE, AND THE SATELLITE SPIN AXIS DIRECTION. THE REMAINING CHARACTERS WERE DIVIDED INTO 90 SETS OF 72 CHARACTERS EACH. EACH SET CONTAINS, FOR THE MIDPOINT OF THE 10-SEC INTERVAL, THE UT (DAY OF THE YR, HR, MIN, AND SEC), EAST GEOGRAPHIC LONGITUDE, GEOGRAPHIC LATITUDE, ALTITUDE, PITCH ANGLE, INVARIANT LATITUDE, MAGNITUDES OF THE MAGNETIC FIELD FROM THE SATELLITE MAGNETOMETER AND THE JENSEN AND CAIN MODEL, INVARIANT RADIUS, AND L VALUE. DATA FROM EACH DETECTOR IN THE FORM OF THE LOGARITHM OF THE COUNTING RATE AVERAGED OVER THE 10-SEC INTERVAL AND CORRECTED FOR DEAD TIME ONLY ARE ALSO CONTAINED IN EACH SET. BOTH TAPES ARE IN TIME ORDER. THE FIRST TAPE CONTAINS ONLY THOSE DATA RECEIVED AT COLLEGE, ALASKA, DURING THE PERIOD FROM SEPTEMBER 29, 1962, TO MARCH 26, 1964. THE SECOND TAPE CONTAINS DATA RECEIVED AT 11 OTHER STATIONS, GROUPED BY STATION, DURING THE PERIOD FROM OCTOBER 17, 1962, TO JANUARY 17, 1964.

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SPACECRAFT NAME- EXPLORER 14 NSSDC ID 62-051A  
 OTHER NAMES- 1962 BETA GAMMA 1, EPE B, S 3A, 62-051A  
 LAUNCH DATE- 10/02/62 DATE LAST SCIENTIFIC DATA RECORDED- 08/11/63  
 AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 40.4 KG  
 ORBIT TYPE- GEOCENTRIC EPOCH- 10/02/62 ORBIT PERIOD- 2184 MIN.  
 APOGEE- 58517. KM ALT PERIGEE- 267. KM ALT INCLINATION- 33 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

EXPLORER 14 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE COSMIC-RAY PARTICLES, TRAPPED PARTICLES, SOLAR WIND PROTONS, AND MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC FIELDS. IT WAS THE SECOND OF THE S 3 SERIES OF SPACECRAFT, WHICH ALSO INCLUDED EXPLORERS 12, 15, AND 26. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.323 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHERS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT FUNCTIONED WELL EXCEPT FOR THE PERIOD FROM JANUARY 10 TO 24, 1963, AND AFTER AUGUST 11, 1963, WHEN THE ENCODER MALFUNCTIONED TERMINATING THE TRANSMISSION OF USABLE DATA. GOOD DATA WERE RECORDED FOR APPROXIMATELY 85 PERCENT OF THE ACTIVE LIFETIME OF THE SPACECRAFT. THE SPACECRAFT WAS CONING (37-DEG MAXIMUM HALF ANGLE) UNTIL JANUARY 10, 1963. AFTER JANUARY 24, 1963, IT WAS SPIN STABILIZED AT A RATE OF 10 RPM. THIS RATE SLOWLY DECREASED TO 1 RPM ON JULY 8, 1963. INITIALLY,



THE LOCAL TIME OF APOGEE WAS 0700 HOURS.

EXPERIMENT NAME- FLUXGATE MAGNETOMETERS

NSSDC ID 62-051A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF NEW HAMPSHIRE

INVESTIGATORS- L.J. CAHILL, JR., U OF MINNESOTA , MINNEAPOLIS, MINN.

DATE LAST USEFUL DATA RECORDED- 10/08/63

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE MAGNITUDE AND DIRECTION OF THE EARTH'S MAGNETIC FIELD BETWEEN 3 AND 13 EARTH RADII. IT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETOMETERS MOUNTED ON THE END OF AN 86.4-CM BOOM. ONE MAGNETOMETER AXIS WAS WITHIN 2 DEG OF THE SPACECRAFT SPIN AXIS. EACH OF THE THREE SENSORS HAD A RANGE OF -500 TO +500 GAMMAS WITH A SENSITIVITY OF 1 GAMMA. THE THREE COMPONENTS OF THE MAGNETIC FIELD WERE ALL MEASURED WITHIN A 50-MSEC TIME PERIOD ONCE EVERY 327 MSEC. AN INFLIGHT CALIBRATION SYSTEM APPLIED A KNOWN MAGNETIC FIELD TO EACH SENSOR IN TURN ONCE EVERY 115 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH OCTOBER 8, 1963.

DATA SET NAME- TEN-SEC AVERAGES OF FIELD COMPONENTS AT  
5-MIN INTERVALS ON TAPE

NSSDC ID 62-051A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/01/63 TO 05/30/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SIX 7-TRACK, BCD, 556-BPI TAPES SUBMITTED BY THE EXPERIMENTER. INFORMATION RELATED TO A SINGLE OBSERVATION OCCUPIES THREE 112-CHARACTER RECORDS. TWO OF THESE RECORDS CONTAIN 10-SEC AVERAGES OF CERTAIN MEASURED FIELD VALUES PRESENTED EVERY 5 MIN. THESE VALUES, DERIVED FROM THE ORTHOGONAL COMPONENT MEASUREMENTS, ARE THE RIGHT ASCENSION, DECLINATION, AND MAGNITUDE OF THE FIELD, THE POLAR ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE SPIN AXIS), THE AZIMUTHAL ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE MERIDIAN PLANE PASSING THROUGH THE SUN), AND THE STANDARD DEVIATION OF EACH COMPONENT. THE THIRD RECORD CONTAINS THE FOLLOWING -- DAY NUMBER (FROM DAY OF LAUNCH), HR, MIN, MSEC, GEOCENTRIC LONGITUDE, LATITUDE, AND RADIUS, L VALUE, AND THE THEORETICAL FIELD MAGNITUDE BASED ON THE 1962 MODEL OF JENSEN AND CAIN. THESE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM JANUARY 1, 1963, TO MAY 30, 1963. MANY OF THE DATA GAPS ARE DUE TO PERIGEE PASSING (MAGNITUDE OF THE MAGNETIC FIELD IS GREATER THAN 500 GAMMAS), AND THESE OCCUR WITH A PERIOD OF APPROXIMATELY 36.4 HR.

EXPERIMENT NAME- TRAPPED PARTICLE RADIATION

NSSDC ID 62-051A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA  
L.A. FRANK, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 08/11/63

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO OBTAIN SEPARATELY DEFINITIVE VALUES OF THE ABSOLUTE INTENSITIES OF GEOMAGNETICALLY TRAPPED ELECTRONS (E.GE. 40 KEV AND E.GE. 230 KEV) AND PROTONS (E.GE. 500 KEV) PARTICULARLY IN THE OUTER ZONE. THE EXPERIMENT USED AN ARRAY OF THREE THIN-WINDOWED ANTEN TYPE 213 DIRECTIONAL GM COUNTERS. THE DETECTORS WERE ORIENTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS (THE SPACECRAFT HAD AN INITIAL SPIN PERIOD OF ABOUT 6 SEC.) THE EXPERIMENT WAS ALSO DESIGNED TO STUDY THE PHYSICAL PHENOMENA NEAR THE BOUNDARY OF THE MAGNETOSPHERE. AN OMNIDIRECTIONAL 302 GM DETECTOR WAS USED TO GATHER DATA FOR COMPARISON WITH MEASUREMENTS OBTAINED WITH THE 302 TYPE GM DETECTORS ON EARLIER SATELLITES. EACH DETECTOR WAS SAMPLED FOR 10.24 SEC. AND THE ACCUMULATED COUNTS WERE TRANSMITTED REDUNDANTLY EVERY 76.8 SEC. THE TRAPPED PARTICLES EXPERIMENT OPERATED SATISFACTORILY UNTIL AUGUST 11, 1963, WHEN MODULATION OF THE TELEMETRY SIGNAL CEASED.

DATA SET NAME- GEIGER TUBE COUNT RATES ON MAGNETIC TAPE

NSSDC ID 62-051A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MASTER SORT FILE ON TEN 7-TRACK, IBM 7044, 556-BPI, BCD, EVEN PARITY, MAGNETIC TAPES CONTAINING REDUCED DATA (TIME, COUNTING RATES OF THE DETECTORS, AND VALIDITY FLAGS) IN A TIME-ORDERED FORMAT. THE DATA ARE BLOCKED AT 120 CHARACTERS PER LOGICAL RECORD WITH 10 LOGICAL RECORDS PER PHYSICAL RECCRD. NO ORBITAL DATA ARE INCLUDED.

DATA SET NAME- GEIGER TUBE COUNT RATES AND ORBITAL DATA  
ON MAGNETIC TAPE

NSSDC ID 62-051A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A SCIENCE FILE CONTAINING REDUCED DATA ON EIGHT

7-TRACK, IBM 7044, BCD, EVEN PARITY, MAGNETIC TAPES WRITTEN AT 556 BPI. THE DATA INCLUDE TIME-ORDERED COUNTING RATES OF THE DETECTORS MERGED WITH EPHEMERIS DATA, B (GAUSS), MCILWAIN'S L PARAMETER (EARTH RADII), AND KP INDICES. THE DATA ARE BLOCKED AT 120 CHARACTERS PER LOGICAL RECORD WITH ONE LOGICAL RECORD IN EACH PHYSICAL BLOCK.

DATA SET NAME- COMPACTED GEIGER TUBE COUNT RATES AND  
ORBITAL DATA ON MAGNETIC TAPE

NSSDC ID 62-051A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

THE DATA FROM 62-051A-03B HAVE BEEN COMPACTED TO TWO 7-TRACK, IBM 7094, BCD, EVEN PARITY, MAGNETIC TAPES WRITTEN AT 556 BPI. IN THIS DATA SET, THE DATA INCLUDE TIME-ORDERED COUNTING RATES OF THE DETECTORS MERGED WITH B (GAUSS), MCILWAIN'S L PARAMETER (EARTH RADII), KP INDICES, AND ADDITIONAL EPHEMERIS DATA.

DATA SET NAME- L-INTERPOLATED ELECTRON COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 62-051A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF L-INTERPOLATED, DEAD-TIME CORRECTED, ELECTRON COUNT RATES (FROM DATA SET 62-051A-03A) ON ONE 7-TRACK, IBM 7094, EVEN PARITY, BCD MAGNETIC TAPE WRITTEN AT 556 BPI. THE DATA CONSIST OF CARD IMAGES. THERE ARE FOUR TAPE FILES (FILES 1 THROUGH 4) FOR THESE DATA CONTAINING, RESPECTIVELY, COUNT RATES FROM THE TYPE 302, 213A, 213B, AND 213C GM COUNTERS. THE DATA RECORDS (ONE LOGICAL RECORD PER PHYSICAL RECORD) ARE ORDERED BY L VALUE. EACH DATA RECORD WITHIN A FILE IS 80 CHARACTERS LONG AND IS PRECEDED BY A 60-CHARACTER HEADER RECORD AND FOLLOWED BY A TWO-CHARACTER TRAILER RECORD. THE EXPERIMENTAL DATA HAVE BEEN INTERPOLATED TO  $L = 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, 11.0, \text{ AND } 12.0$  AND ARE GROUPED BY L VALUE. THE DATA ARE TIME ORDERED WITHIN A GIVEN L-VALUE GROUP. THE DATA SET ALSO INCLUDES TIME (LOCAL TIME, LT, SOLAR ROTATION TIME), GEOMAGNETIC LATITUDE, GEOGRAPHIC LATITUDE, B/BO, AND MCILWAIN'S L VALUE. A SIMILAR DATA SET (61-020A-03C) FROM EXPLORER 12 IS ALSO CONTAINED ON THIS TAPE (FILE 5).

EXPERIMENT NAME- COSMIC RAY

NSSDC ID 62-051A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- F.B. MCDONALD, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 08/11/63

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THE COSMIC-RAY EXPERIMENT CONSISTED OF (1) A DOUBLE SCINTILLATION COUNTER TELESCOPE THAT MEASURED 55- TO 500-MEV PROTONS IN SIX ENERGY INTERVALS AND PROTONS ABOVE 600 MEV, (2) A SINGLE SCINTILLATOR THAT MEASURED 1.4- TO 22-MEV PROTONS AT FIVE ENERGY THRESHOLDS ABOVE 150 KEV, AND (3) A GM COUNTER TELESCOPE THAT MEASURED PROTON FLUXES ABOVE 30 MEV. A COMPLETE SET OF MEASUREMENTS WAS MADE EVERY 6.3 MIN. THE EXPERIMENT WORKED THROUGHOUT THE USEFUL LIFE OF THE SPACECRAFT, OCTOBER 2, 1962, TO AUGUST 11, 1963.

DATA SET NAME- REDUCED COUNT RATE DATA ON TAPE

NSSDC ID 62-051A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

SEVENTEEN 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES, WHICH WERE SUBMITTED BY THE EXPERIMENTER, CONTAIN A COMPLETE SET OF REDUCED DATA FROM ALL THREE DETECTORS, ALONG WITH TIME, ORBIT, AND ATTITUDE PARAMETERS. THE TAPES ARE BLOCKED WITH 6.3 MIN OF DATA PER TAPE RECORD. INCLUDED ARE DATA FOR PERIODS WHEN THE SPACECRAFT ENCODER WAS WORKING, OCTOBER 2, 1962, TO JANUARY 10, 1963, AND JANUARY 24, 1963, TO AUGUST 11, 1963, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON MICROFILM IN DATA SET 62-051A-04C.

DATA SET NAME- AVERAGED COUNT RATE DATA ON TAPE

NSSDC ID 62-051A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE IBM 7094, 7-TRACK, BINARY MAGNETIC TAPES, TWO WRITTEN AT 556 BPI AND ONE WRITTEN AT 800 BPI. SUBMITTED BY THE EXPERIMENTER, THE TAPES CONTAIN A COMPLETE SET OF TIME-AVERAGED DATA (FOR 55-MIN PERIODS) FROM ALL THREE DETECTORS, ALONG WITH TIME AND SPACECRAFT HEIGHT. DATA ARE INCLUDED FOR PERIODS WHEN THE SPACECRAFT ENCODER WAS WORKING, OCTOBER 2, 1962, TO JANUARY 10, 1963, AND JANUARY 24, 1963, TO AUGUST 11, 1963, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON MICROFILM IN DATA SET 62-051A-04D.

DATA SET NAME- REDUCED COUNT RATE DATA ON MICROFILM

NSSDC ID 62-051A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 27 REELS OF 16-MM MICROFILM THAT WERE SUBMITTED BY THE EXPERIMENTER. THE MICROFILM CONTAINS TABLES LISTING ALL REDUCED DATA FROM ALL THREE DETECTORS, ALONG WITH TIME, ORBIT, AND ATTITUDE PARAMETERS. EACH TABLE CONTAINS 6.3 MIN OF DATA. INCLUDED ARE DATA FOR PERIODS WHEN THE SPACECRAFT ENCODER WAS WORKING, OCTOBER 2, 1962, TO JANUARY 10, 1963, AND JANUARY 24, 1963, TO AUGUST 11, 1963, WITH ABOUT 80 PERCENT COVERAGE. THE SAME DATA ARE AVAILABLE ON MAGNETIC TAPE IN DATA SET 62-051A-04A.

DATA SET NAME- AVERAGED COUNT RATE DATA ON MICROFILM

NSSDC ID 62-051A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/02/62 TO 08/11/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH CONSISTS OF FIVE REELS OF 16-MM MICROFILM THAT WERE SUBMITTED BY THE EXPERIMENTER, CONTAINS TABLES LISTING A COMPLETE SET OF TIME-AVERAGED DATA (55-MIN PERIODS) FROM ALL THREE DETECTORS, ALONG WITH TIME AND SPACECRAFT HEIGHT. INCLUDED ARE DATA FROM PERIODS WHEN THE SPACECRAFT ENCODER WAS WORKING, OCTOBER 2, 1962, TO JANUARY 10, 1963, AND JANUARY 24, 1963, TO AUGUST 11, 1963, WITH ABOUT 80 PERCENT COVERAGE. THE SAME DATA ARE AVAILABLE ON MAGNETIC TAPE IN DATA SET 62-051A-04B.

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SPACECRAFT NAME- INJUN 3

NSSDC ID 62-067B

OTHER NAMES- 1962 BETA TAU 2, INJUN 2B, 62-067B

LAUNCH DATE- 12/13/62

DATE LAST SCIENTIFIC DATA RECORDED- 10/31/63

AGENCY- ONR

SPACECRAFT WEIGHT IN ORBIT-

52 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 12/13/62

ORBIT PERIOD- 116.3 MIN.

APOGEE- 2785. KM ALT

PERIGEE- 235. KM ALT

INCLINATION- 70.38 DEGREES

SPACECRAFT BRIEF DESCRIPTION

INJUN 3 WAS A MAGNETIC FIELD ALIGNED SPACECRAFT INSTRUMENTED FOR A STUDY OF

GEOPHYSICAL PHENOMENA (PARTICULARLY HIGH LATITUDE AND AURORAL PHENOMENA) USING AN INTEGRATED SYSTEM OF SEVEN PARTICLE DETECTORS, A VLF DETECTOR, AURORAL PHOTOMETERS, AND A BIAxIAL FLUXGATE MAGNETOMETER. THE FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. INJUN 3 HAD TWO SEPARATE TELEMETRY AND ENCODING SYSTEMS (PCM/FSK/PM AND PCM/FSK/AM) POWERED BY A COMMON BATTERY-SOLAR CELL POWER SUPPLY. THE SPACECRAFT WAS LAUNCHED SIMULTANEOUSLY WITH AND SUCCESSFULLY SEPARATED FROM THE U.S. AIR FORCE SPACECRAFT 1962 BETA TAU. INJUN 3 PERFORMED NORMALLY UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED. THE SATELLITE COMMAND SYSTEM COULD NOT COMMAND TELEMETRY MODE 5 ON AFTER SOME TIME IN MARCH 1963, AND TELEMETRY MODE 1 WAS USED ALMOST EXCLUSIVELY THEREAFTER. THE SATELLITE DECAYED FROM ORBIT AUGUST 25, 1968.

EXPERIMENT NAME- GEIGER TUBE DETECTORS

NSSDC ID 62-067B-01

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY, SYDNEY, AUSTRALIA  
L.A. FRANK, U OF IOWA, IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 10/28/63

EXPERIMENT BRIEF DESCRIPTION

A SET OF FOUR GM TUBE DETECTORS WAS USED TO DETECT ELECTRONS AND PROTONS IN THE RADIATION BELTS. THREE TYPE 213 DETECTORS POINTED DIRECTIONALLY AT 90 DEG, 130 DEG, OR 180 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD. THE FOURTH DETECTOR WAS A TYPE 302 OMNIDIRECTIONAL GM TUBE. ORIENTATION OF THE DETECTORS IS REFERRED TO THE DIRECTION OF THE MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE GM TUBES HAD THRESHOLD ENERGIES OF 0.5 MEV AND 4 MEV FOR ELECTRONS AND 40 KEV AND 250 KEV FOR PROTONS. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- TABULATION OF 2- TO 12-A SOLAR SOFT  
X-RAY DATA

NSSDC ID 62-067B-01A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 12/20/62 TO 10/13/63

DATA SET BRIEF DESCRIPTION

SOLAR SENSORS INDICATED WHEN GEIGER COUNTERS, INTENDED PRIMARILY FOR USE AS PARTICLE DETECTORS, DETECTED SOLAR X RAYS (2 TO 12 A). THESE X-RAY OBSERVATIONS WERE LATER SEPARATED FROM THE PARTICLE DATA. THE DATA ARE

ANALYZED DATA FROM THE EXPERIMENTER, FORM A SUBSET OF DATA SET 62-067B-01B, AND ARE IN THE FORM OF A LIST OF COUNTING RATES DUE TO X RAYS. THE OBSERVATIONS COVER THE PERIOD FROM DECEMBER 20, 1962, THROUGH OCTOBER 13, 1963. MOST OBSERVATIONS OCCURRED IN MAY, JUNE, AND JULY 1963. COVERAGE WAS QUITE LOW (LESS THAN 1 PERCENT). THESE DATA ARE PUBLISHED IN A DATA USERS' NOTE, NSSDC 69-11, 'INJUN 3 SOFT X-RAY EXPERIMENT.'

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, GM COUNTS NSSDC ID 62-067B-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/28/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

DATA SET NAME- ANALYZED GM COUNTER PARTICLE FLUX PLOTS ON MICROFILM NSSDC ID 62-067B-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/01/63 TO 10/20/63

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF MACHINE GENERATED PARTICLE FLUX PLOTS ON ONE REEL OF 16-MM MICROFILM FOR THE THREE 213 GM DETECTORS, D1, D4, AND D5, ORIENTED AT 90, 130, AND 180 DEG TO THE LOCAL MAGNETIC FIELD IN THE NORTHERN HEMISPHERE. DETECTOR D1 MEASURED MIRRORING PARTICLES IN BOTH NORTHERN AND SOUTHERN HEMISPHERES, D4 MEASURED PARTICLES WITH A PITCH ANGLE OF 50 DEG IN THE NORTHERN HEMISPHERE AND 130 DEG IN THE SOUTHERN HEMISPHERE, AND D5 MEASURED PRECIPITATING PARTICLES IN THE NORTHERN HEMISPHERE AND BACKSCATTERING PARTICLES IN THE SOUTHERN HEMISPHERE. ALL THREE DETECTORS HAD ENERGY THRESHOLDS OF 40 KEV FOR ELECTRONS AND 0.5 MEV FOR PROTONS. THE DATA WERE GENERATED FROM THE UNIVERSITY OF IOWA MASTER FILE MAGNETIC TAPES (DATA SET 62-067B-01B) AND, IN SOME CASES, FROM THE RAW INJUN 3 TELEMETRY DATA. EACH PAGE OF DATA CONSISTS OF TWO SEPARATE PLOTS, ONE FOR EACH DETECTOR, OF PARTICLE FLUX (1/CM SQ-SEC-STER) (GENERATED FROM D1 AND FROM D4 OR FROM D1 AND FROM D5) VS INVARIANT LATITUDE. (WITHIN EACH GRAPH, THE FLUX IS ALSO PLOTTED AGAINST UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD MAGNITUDE.) EACH PAGE ALSO INCLUDES A PLOT OF THE

CORRESPONDING RATIO OF FLUXES D4/D1 OR D5/D1 VS INVARIANT LATITUDE, AS WELL AS UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD IN THE SAME GRAPH. THE GM FLUX DATA ARE DIVIDED INTO THREE SEPARATE TIME-ORDERED GROUPS IN THIS DATA SET -- THE DATA THAT WERE OBTAINED IN SATELLITE TELEMETRY MODE 1 (DETECTORS SAMPLED ABOUT FOUR TIMES/SEC) ARE DIVIDED INTO THE NORTHERN HEMISPHERE (DETECTORS D1 AND D5) AND THE SOUTHERN HEMISPHERE (DETECTORS D1 AND D5). THE DATA OBTAINED IN SATELLITE TELEMETRY MODE 5 IN BOTH HEMISPHERES COMPRISE THE THIRD GROUP OF DATA (DETECTOR D1 SAMPLED ABOUT FIVE TIMES/SEC AND D4 SAMPLED ABOUT TWO TIMES/SEC). THE PLOTS PROVIDE CONTINUOUS TIME COVERAGE FOR MOST OF THE LIFE OF THE EXPERIMENT FOR INVARIANT LATITUDES FROM 55 TO 90 DEG WITH ONE SATELLITE PASS PER PLOT. THE FLUXES ARE BASED ON 8-SEC SUMS OF DETECTOR OUTPUTS AND HAVE BEEN CORRECTED FOR GEOMETRIC FACTORS AND GM COUNTER SATURATION WHEN POSSIBLE.

EXPERIMENT NAME- PULSE SCINTILLATOR

NSSDC ID 62-067B-02

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY, SYDNEY, AUSTRALIA  
C.E. MCILWAIN, U OF CALIFORNIA, SD, LA JOLLA, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/28/63

#### EXPERIMENT BRIEF DESCRIPTION

AN OMNIDIRECTIONAL PULSE SCINTILLATOR COMPOSED OF A SPHERICAL PLASTIC SCINTILLATOR AND PHOTOMULTIPLIER TUBE WAS USED TO DETECT PROTONS (E.G. 40 MEV) IN THE NATURAL AND ARTIFICIAL RADIATION BELTS AS A FUNCTION OF SPATIAL LOCATION AND TIME. THE DETECTOR, WHICH PROTRUDED BEYOND THE SATELLITE SHELL, WAS ORIENTED AT 180 DEG TO THE LOCAL MAGNETIC FIELD DIRECTION AND HAD AN UNOBSTRUCTED VIEW OVER ALMOST 2 PI STER. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, PULSE  
SCINTILLATOR COUNTS

NSSDC ID 62-067B-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/28/63

#### DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT



AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/B0, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-0678-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

EXPERIMENT NAME- MAGNETIC DIFFERENTIAL ELECTRON  
SPECTROMETER

NSSDC ID 62-0678-03

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY , SYDNEY, AUSTRALIA  
C.D. LAUGHLIN, McDONALD OBSERVATORY , FT. DAVIS, TEXAS

DATE LAST USEFUL DATA RECORDED- 10/28/63

EXPERIMENT BRIEF DESCRIPTION

A MAGNETIC DIFFERENTIAL SPECTROMETER COMPOSED OF THREE ANTON 213 GM COUNTERS (TWO DIRECTIONAL, ONE OMNIDIRECTIONAL) AND TWO MAGNETS WAS USED TO DETECT LOCALLY MIRRORING ELECTRONS IN THE ENERGY RANGES 40 TO 60 KEV AND 80 TO 110 KEV. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, ELECTRON  
SPECTROMETER COUNTS

NSSDC ID 62-0678-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/28/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- UT AND LOCAL TIME, LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/B0, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-0678-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

DATA SET NAME- ANALYZED MAGNETIC DIFFERENTIAL ELECTRON  
SPECTROMETER FLUX PLOTS ON MICROFILM

NSSDC ID 62-0678-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/01/63 TO 05/15/63

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF MACHINE GENERATED PARTICLE FLUX PLOTS ON ONE 16-MM REEL OF MICROFILM FOR TWO OF THE 213 GM COUNTERS (SPL AND SPH) OF THE MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER ORIENTED AT 90 DEG TO THE LOCAL MAGNETIC FIELD. DETECTOR SPL WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE FROM 40 TO 60 KEV, AND SPH WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE 80 TO 110 KEV. THE DETECTORS WERE NOT SENSITIVE TO PROTONS. THE DATA WERE GENERATED FROM THE UNIVERSITY OF IOWA MASTER FILE MAGNETIC TAPES (DATA SET 62-0678-03A). EACH PAGE OF THE DATA INCLUDES A PLOT FOR EACH OF THE TWO DETECTORS OF PARTICLE FLUX (1/CM SQ-SEC-STER) VS INVARIANT LATITUDE. (THE FLUX IS ALSO PLOTTED AGAINST UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD MAGNITUDE IN THE SAME GRAPH.) EACH PAGE ALSO SHOWS A PLOT OF THE EXPONENTIAL SPECTRAL PARAMETER, EO, AND THE POWER LAW SPECTRAL PARAMETER, GAMMA, VS INVARIANT LATITUDE, AS WELL AS UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD. THE PLOTS ARE TIME ORDERED AND PROVIDE TIME COVERAGE FOR MOST OF THE LIFE OF THE EXPERIMENT FOR INVARIANT LATITUDES FROM 55 TO 90 DEG. EACH PLOT COVERS ONE SATELLITE PASS. THE FLUXES ARE BASED ON 8-SEC SUMS IN A TELEMETRY MODE IN WHICH THE DETECTORS WERE SAMPLED ONCE PER SECOND, AND THE FLUXES HAVE BEEN CORRECTED FOR GEOMETRIC FACTORS AND GM COUNTER SATURATION. THE SPH DETECTOR MALFUNCTIONED AFTER MAY 15, 1963.

EXPERIMENT NAME- INTEGRAL MAGNETIC ELECTRON  
SPECTROMETER

NSSDC ID 62-0678-04

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY, SYDNEY, AUSTRALIA  
C.D. LAUGHLIN, MCDONALD OBSERVATORY, FT. DAVIS, TEXAS

DATE LAST USEFUL DATA RECORDED- 10/25/63

EXPERIMENT BRIEF DESCRIPTION

AN INTEGRAL MAGNETIC SPECTROMETER COMPOSED OF THREE DIRECTIONAL ANTON 213 GM COUNTERS AND TWO BROOM MAGNETS WAS TO BE USED TO STUDY LOCALLY MIRRORING HIGH-ENERGY FISSION ELECTRONS (E.GT. 1.5 MEV) INJECTED INTO THE GEOMAGNETIC FIELD BY THE STARFISH HIGH ALTITUDE NUCLEAR EXPLOSION. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED. HOWEVER, SINCE THE DETECTOR WAS DESIGNED AND BUILT JUST BEFORE THE INJUN 3 LAUNCH, PROPER ORIENTATION OF THE BROOM MAGNETS WAS NOT ACHIEVED. AS A RESULT, NEITHER OF THE CORRESPONDING GM COUNTERS RESPONDED SOLELY TO PARTICLES WHICH TRAVELED AT 90 DEG TO THE LOCAL MAGNETIC FIELD. THE ACTUAL PITCH ANGLES (ABOUT 70 DEG) OBSERVED WERE SOMEWHAT DEPENDENT ON ELECTRON ENERGY.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, GM COUNTS  
(STARFISH)

NSSDC ID 62-067B-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/25/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

EXPERIMENT NAME- DC SCINTILLATOR

NSSDC ID 62-067B-05

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY, SYDNEY, AUSTRALIA  
R. HALE, U OF IOWA, IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 10/31/63

EXPERIMENT BRIEF DESCRIPTION

A DIRECTIONAL CESIUM IODIDE SCINTILLATOR, ORIENTED AT 130 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD, WAS USED TO STUDY OUTFLUX AND AURORAL PHENOMENA, I.E., TO DETECT LOW-ENERGY ELECTRONS (E.GE. 5 KEV) AND PROTONS (E.GE. 50 KEV). ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE EXPERIMENT PERFORMED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, DC  
SCINTILLATOR COUNTS

NSSDC ID 62-067B-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/31/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

EXPERIMENT NAME- ELECTRON MULTIPLIER

NSSDC ID 62-067B-06

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY, SYDNEY, AUSTRALIA  
D.E. STILWELL, U OF IOWA, IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 10/25/63

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT USED A DIRECTIONAL ELECTRON MULTIPLIER DETECTOR SIMILAR TO THE ASCOP 541A PHOTOMULTIPLIER EXCEPT THAT IT LACKED A PHOTOCATHODE. THE DETECTOR WAS ORIENTED AT 130 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD LINE TO OBTAIN TOTAL NUMBER FLUXES OF ELECTRONS IN THE ENERGY RANGE E.GE. 10 KEV. ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATOR WAS SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, ELECTRON  
MULTIPLIER COUNTS

NSSDC ID 62-067B-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/25/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT

AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

EXPERIMENT NAME- PROTON SPECTROMETER

NSSDC ID 62-067B-07

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY , SYDNEY, AUSTRALIA  
C.O. BOSTROM, APPLIED PHYSICS LAB , SILVER SPRING, MD.  
G.F. PIEPER, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 10/31/63

EXPERIMENT BRIEF DESCRIPTION

A SET OF FOUR P-N JUNCTION DETECTORS, EACH HAVING ITS OWN AMPLIFIER, WAS USED APPLYING COINCIDENCE TECHNIQUES TO STUDY THE PROTON SPECTRUM IN THE FOLLOWING RANGES -- 1.2 TO 2.2 MEV, 2.2 TO 8 MEV, 8 TO 24 MEV, AND 24 TO 100 MEV. TWO OF THE DETECTORS WERE ORIENTED AT 90 DEG AND TWO AT 180 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD LINES. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 8.1 SEC IN MODE 1 (PCM/FSK/PM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, P-N COUNTS

NSSDC ID 62-067B-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/31/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

EXPERIMENT NAME- AURORAL AND AIRGLOW PHOTOMETERS

NSSDC ID 62-067B-08

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- B.J. O'BRIEN, U OF SYDNEY, SYDNEY, AUSTRALIA

DATE LAST USEFUL DATA RECORDED- 10/28/63

EXPERIMENT BRIEF DESCRIPTION

THREE PHOTOMETERS WERE EMPLOYED TO MEASURE AURORAL AND AIRGLOW INTENSITIES. TWO WERE SENSITIVE TO THE ATOMIC OXYGEN GREEN LINE AT 5577 Å AND ONE TO THE MOLECULAR NITROGEN BAND NEAR 3914 Å. THE 3914-Å PHOTOMETER AND ONE OF THE 5577-Å PHOTOMETERS WERE SITUATED ADJACENT TO EACH OTHER ON THE SPACECRAFT AND HAD A VIEWING DIRECTION DOWN TOWARD THE EARTH IN THE ARCTIC REGION. THESE SAME TWO PHOTOMETERS, BECAUSE OF THE MAGNETIC ORIENTATION OF THE SPACECRAFT, WERE FACING OUT TOWARD SPACE IN THE ANTARCTIC REGION. THE OTHER 5577-Å PHOTOMETER WAS LOCATED ON THE OPPOSITE SIDE OF THE SPHERICAL SPACECRAFT AND CONSEQUENTLY HAD A VIEWING DIRECTION THAT WAS DIFFERENT FROM THE OTHERS BY 180 DEG AT ALL TIMES. THE SATELLITE TRANSMITTED ONLY UPON COMMAND FROM THE GROUND, FOR A FIXED PERIOD OF 17 MIN. DURING THIS TIME, THE TWO 5577-Å PHOTOMETERS WERE USUALLY SAMPLED FOUR TIMES PER SECOND, AND THE 3914-Å PHOTOMETER ONCE EVERY 2 SEC. USEFUL DATA WERE OBTAINED FROM THE EXPERIMENT FROM LAUNCH UNTIL OCTOBER 28, 1963. THE SATELLITE WAS ABANDONED IN NOVEMBER, 1963. THE OPERATION OF THE EXPERIMENT WAS ESSENTIALLY NORMAL, EXCEPT FOR THE INTERMITTENT PERFORMANCE OF ONE OF THE 5577-Å PHOTOMETERS. A MORE COMPLETE DESCRIPTION OF THE EXPERIMENT AND OF THE INSTRUMENTATION AND CALIBRATION PROCEDURES CAN BE FOUND IN J. GEOPHYS. RES., 69, PAGE 45, JAN. 1964.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, PHOTOMETER COUNTS

NSSDC ID 62-067B-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 10/28/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE OF REDUCED DATA FOR INJUN 3 ON FIVE 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THE PHOTOMETER EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 EXPERIMENTS. IN ADDITION, THE FOLLOWING INFORMATION IS GIVEN -- TIME (YR, MONTH, DAY, HR, MIN, AND SEC, FOR BOTH UT AND LOCAL TIME), LONGITUDE (DEG), LATITUDE (DEG), INVARIANT LATITUDE (DEG), ALTITUDE (KM), SCALAR MAGNETIC FIELD (B IN GAUSS), MCILWAIN'S L PARAMETER (EARTH RADII), B/B0, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

EXPERIMENT NAME- VLF RECEIVER SIGNAL STRENGTH

NSSDC ID 62-067B-09

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- C.A. GURNETT, U OF IOWA , ICWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 10/25/63

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY VLF NOISE PHENOMENA AT ORBITAL ALTITUDES. NOISE SOURCES COULD INCLUDE MAN-MADE SIGNALS FROM THE GROUND OR SATELLITE, SPHERICS, OR OTHER NOISES GENERATED IN THE IONOSPHERE, GENERATED BY TRAPPED CHARGED PARTICLES, OR GENERATED FROM OTHER EXTRATERRESTRIAL SOURCES. THE RECEIVER SYSTEM CONSISTED OF A 30.48-CM-DIAMETER LOOP ANTENNA MOUNTED ABOVE THE SPACECRAFT ON A STUBBY SUPPORT. SINCE THE SPACECRAFT ATTITUDE CONTROL MAINTAINED THE PLANE OF THE ANTENNA LOOP PARALLEL TO THE GEOMAGNETIC FIELD LINES, THE MAGNETIC COMPONENT OF THE NOISE WAS OBSERVED. THE ANTENNA FED THE SIGNAL INTO A RECEIVER THAT FILTERED THE SIGNAL AND RECORDED SIGNAL STRENGTH AT FREQUENCIES (WITH BANDWIDTH OF PLUS OR MINUS 25 HZ) OF 0.7, 2.7, 4.3, 5.5, 7.0, AND 8.8 KHZ. THE SIGNAL STRENGTH OF THE PORTION OF THE WIDE-BAND SIGNAL BETWEEN 0.5 AND 7.0 KHZ WAS ALSO RECORDED. THE MOST COMMON SAMPLING RATE USED WAS ONCE EACH 2 SEC ALTHOUGH AS MANY AS 12 SAMPLINGS PER SECOND WERE POSSIBLE. THE RECORDED SIGNAL STRENGTH VALUE WAS THE MINIMUM SIGNAL STRENGTH OBSERVED SINCE THE LAST RECORD. CLEARLY, THIS EQUIPMENT WAS DESIGNED TO OBSERVE RELATIVELY CONTINUOUS SLOWLY VARYING VLF SPECTRA AND NOT TRANSIENT NOISE BURSTS. THIS EXPERIMENT IS DESCRIBED IN MORE DETAIL IN J. GEOPHYS. RES., 69, 65-89, 1964.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE,  
NARROW-BAND DATA

NSSDC ID 62-067B-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/25/62 TO 10/25/63

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7054, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTS FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 EXPERIMENTS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (YR, MONTH, DAY, HR, MIN, SEC, FOR BOTH UT AND LOCAL TIME), LONGITUDE (DEG), LATITUDE (DEG), INVARIANT LATITUDE (DEG), ALTITUDE (KM), SCALAR MAGNETIC FIELD (B IN GAUSS), MCILWAIN'S L PARAMETER (EARTH RADII), B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

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SPACECRAFT NAME- RELAY 1 NSSDC ID 62-068A  
OTHER NAMES- 1962 BETA UPSILON 1, A 15, 62-068A  
LAUNCH DATE- 12/13/62 DATE LAST SCIENTIFIC DATA RECORDED- 02/10/65  
AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 79.4 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 12/13/62 ORBIT PERIOD- 185.1 MIN.  
APOGEE- 8439. KM ALT PERIGEE- 1232. KM ALT INCLINATION- 47.48 DEGREES

SPACECRAFT BRIEF DESCRIPTION

RELAY 1 WAS PRINCIPALLY A COMMUNICATIONS SATELLITE. INCLUDED IN ITS PAYLOAD WERE RADIATION EXPERIMENTS DESIGNED TO MAP THE EARTH'S RADIATION BELTS. THE SPIN-STABILIZED SPACECRAFT HAD AN INITIAL SPIN RATE OF 167.3 RPM AND AN INITIAL SPIN AXIS ORIENTATION WITH A DECLINATION OF -68.3 DEG AND A RIGHT ASCENSION OF -56 DEG. SHORTLY AFTER LAUNCH, TWO BASIC PROBLEMS EVOLVED. ONE WAS THE SATELLITE'S RESPONSE TO SPURIOUS COMMANDS, AND THE OTHER WAS THE LEAKAGE OF A HIGH-POWER REGULATOR. THIS LEAKAGE CAUSED THE FIRST 2 WEEKS OF SATELLITE OPERATION TO BE USELESS. AFTER THIS PERIOD, SATELLITE OPERATION RETURNED TO NORMAL. THE SATELLITE CARRIED ONE TRANSMITTER FOR TRACKING AND ONE FOR TELEMETRY. THE TELEMETRY SYSTEM WAS PCM AT 1152 BPS. EACH 128 WORDS PER TELEMETRY FRAME (OF 1 SEC) USED 113 WORDS FOR THE PARTICLE EXPERIMENT. THE LEAKAGE PROBLEM CAUSED THE SPACECRAFT TO REVERT TO A LOW VOLTAGE STATE EARLY IN 1965. SPORADIC TRANSMISSION OCCURRED UNTIL FEBRUARY 10, 1965, AFTER WHICH NO USABLE SCIENTIFIC DATA WERE OBTAINED.

EXPERIMENT NAME- SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR NSSDC ID 62-068A-02

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

INVESTIGATORS- W.L. BROWN, BELL TELEPHONE LAB , MURRAY HILL, N.J.

DATE LAST USEFUL DATA RECORDED- 02/10/65

EXPERIMENT BRIEF DESCRIPTION

TWO SILICON PHOSPHOROUS-DIFFUSED DIODES WERE USED AS SMALL SOLID-STATE IONIZATION CHAMBERS TO MAP THE EARTH'S RADIATION ENVIRONMENT. COUNTS WERE ACCUMULATED ONLY WHEN THE DETECTORS LOOKED WITHIN 10 DEG OF THE LOCAL MAGNETIC FIELD. THE DIODE USED TO DETECT PROTONS WAS MOUNTED BEHIND A 25-DEG HALF-ANGLE APERTURE COLLIMATOR WITH AN ENTRANCE APERTURE OF 2-MM DIAMETER. THE OUTER SHIELD WAS SUFFICIENTLY MASSIVE TO EXCLUDE PROTONS LESS THAN 80 MEV AND ELECTRONS LESS THAN 10 MEV. MAGNETS SURROUNDING THE DIODE EFFECTIVELY EXCLUDED ELECTRONS LESS THAN 300 KEV. THE DETECTOR RESPONDED TO PROTONS FROM 1.8 MEV TO 18 MEV AND DISCRIMINATED BETWEEN 1.8-, 3.2-, AND 4.7-MEV PROTONS. ALTHOUGH THE INSTRUMENT WAS DESIGNED TO OPERATE AT THREE



DIFFERENT BIAS MODES (120, 20, AND 5 V), ONLY THE HIGHEST RETURNED USEFUL PROTON DATA. THE OTHER TWO MODES SERVED TO DETECT ELECTRON CONTAMINATION OF THE COUNTING RATE. THE ELECTRON DETECTOR, SIMILAR TO THE PROTON DETECTOR, HAD A COLLIMATOR WITH A HALF-ANGLE OF 10 DEG, APERTURE DIAMETER OF 2 MM, AND SUFFICIENT SHIELDING TO EXCLUDE PROTONS LESS THAN 60 MEV AND ELECTRONS LESS THAN 60 MEV. (NO MAGNETIC SHIELD WAS USED ON THE ELECTRON DETECTOR.) THE DETECTION SCHEME EMPLOYED PULSE HEIGHT ANALYSES TO DISCRIMINATE BETWEEN 0.2- TO 0.35-, 0.35- TO 0.55-, 0.55- TO 0.75-, AND 0.75- TO 1-MEV ELECTRONS. THE BASIC MEASUREMENT SEQUENCE REQUIRED 12 SEC. COUNTS FROM EACH DETECTOR WERE ACCUMULATED FOR 10 SEC. SAMPLES WERE TELEMETERED EVERY SEC DURING THE ACCUMULATION TIME. THE REGISTERS WERE FROZEN, AND ONE REDUNDANT READING (THE 10TH) WAS TELEMETERED. FOR PROTONS, THIS PROCEDURE WAS CARRIED OUT THREE TIMES FOR EACH BIAS MODE, INTERSPACED BY A 12-SEC ALLOWANCE FOR BIAS CHANGE. THE ENTIRE SEQUENCE OF THREE MODES REQUIRED 144 SEC. FOR ELECTRONS, THE SEQUENCE WAS REPEATED EVERY 12 SEC. THE DETECTORS RETURNED DATA THROUGHOUT THE SPACECRAFT'S USEFUL LIFETIME.

DATA SET NAME- REDUCED L-ORDERED ELECTRON AND PROTON  
DATA ON MAGNETIC TAPE

NSSDC ID 62-068A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/62 TO 03/31/64

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, GENERATED AT BELL TELEPHONE LABS FROM ORIGINAL DATA, ARE CONTAINED ON TWO 7-TRACK, 800-BPI, IBM 7094, BESYS MAGNETIC TAPES WITH A 167-WORD BLOCK SIZE, EACH WORD CONTAINING 36 BITS. THE TWO TAPES CONTAIN L-ORDERED ELECTRON DATA AND L-ORDERED PROTON DATA, RESPECTIVELY. THERE ARE 62 FILES DIVIDING THE DATA INTO L INTERVALS FROM 1 TO 7. EACH RECORD ON A TAPE IS HEADED BY THE MAXIMUM AND MINIMUM L VALUE FOR THE FILE AND THE TIME PERIODS INCLUDED IN THE FILE. THE REST OF THE FILE CONTAINS THE MCILWAIN L PARAMETER, MAGNETIC FIELD, LOG B/80, AND DETECTOR COUNTS. ON THE ELECTRON TAPE, PARTICLES GREATER THAN 1 MEV, BETWEEN 0.20 AND 0.35 MEV, BETWEEN 0.35 AND 0.55 MEV, BETWEEN 0.55 AND 0.75 MEV, AND BETWEEN 0.75 AND 1.00 MEV ARE GIVEN IN UNITS OF COUNTS PER SECOND. ON THE PROTON TAPE, COUNTS PER SECOND FOR THE 100-, 22-, AND 5-V BIASES FOR THE PROTON DETECTOR AND PULSE HEIGHT ANALYSES YIELDING SPECTRAL INFORMATION FOR PROTONS BETWEEN 1.8 AND 3.2 MEV, BETWEEN 3.2 AND 4.7 MEV, AND GREATER THAN 4.7 MEV ARE GIVEN.

EXPERIMENT NAME- PROTON-ELECTRON DETECTORS

NSSDC ID 62-068A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- C.E. MCILWAIN, U OF CALIFORNIA, SD , LA JOLLA, CALIF.  
R.W. FILLIUS, U OF CALIFORNIA, SD , LA JOLLA, CALIF.

DATE LAST USEFUL DATA RECORDED- 02/10/65

#### EXPERIMENT BRIEF DESCRIPTION

INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF AN ENSEMBLE OF PARTICLE DETECTORS. AN OMNIDIRECTIONAL PLASTIC SCINTILLATOR, DETECTOR A, MEASURED THE SUM OF COUNTS DUE TO PROTONS ABOVE 34 MEV AND ELECTRONS ABOVE 3.7 MEV. USING MAGNETOMETER GATING, THE REMAINING DETECTORS (B, C, D) AND ASSOCIATED ELECTRONIC DISCRIMINATION CIRCUITRY MEASURED FLUXES OF APPROXIMATELY LOCALLY MIRRORING PARTICLES. A SOLID-STATE SURFACE BARRIER DETECTOR (B) MEASURED PROTONS IN THE NESTED INTERVALS 1.1 TO 14 MEV, 1.6 TO 7.1 MEV, AND 2.25 TO 4.7 MEV. A TWO-ELEMENT SOLID-STATE TELESCOPE (C) MEASURED PROTONS IN THE ENERGY INTERVALS 18.2 TO 25 MEV, 25 TO 35 MEV, AND 35 TO 63 MEV. A PLASTIC SCINTILLATOR (D) MEASURED IN FOUR DISCRIMINATION STATES THE SUMS OF PROTONS WITH ENERGIES ABOVE 5.2 MEV AND ELECTRONS WITH ENERGIES ABOVE 0.30, 0.45, 0.62, AND 0.82 MEV, RESPECTIVELY. BACKGROUND COUNTS WERE ACCUMULATED BY THESE DETECTORS WHEN THEIR AXIS WAS NOT PERPENDICULAR (TO WITHIN 10 DEG) TO THE LOCAL MAGNETIC FIELD. DETECTOR A CUMULATIVE COUNTS WERE TELEMETERED EVERY SECOND. DETECTORS B, C, AND D DIRECTIONAL FLUX DATA WERE TRANSMITTED AS FOLLOWS DURING SUCCESSIVE 12-SEC INTERVALS EVERY 48 SEC. COUNTS FROM THE VARIOUS DISCRIMINATION STATES OF A GIVEN DETECTOR WERE EACH TELEMETERED ONCE PER SECOND WHILE ACCUMULATING FOR 10 SEC. (SPACECRAFT SPIN PERIOD WAS APPROXIMATELY 0.37 SEC.) TWO REDUNDANT READOUTS FOLLOWED THE CESSATION OF COUNTING. MOST USEFUL DATA WERE TELEMETERED BETWEEN LAUNCH AND OCTOBER 20, 1964, WITH A SMALL AMOUNT OF ADDITIONAL DATA TELEMETERED PRIOR TO THE SPACECRAFT QUIET DATE OF FEBRUARY 10, 1965. DETECTOR B PROVIDED NO USEFUL DATA AFTER MAY 10, 1963.

DATA SET NAME- FORTRAN PROTON FLUX PROGRAM

NSSDC ID 62-068A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- TO

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A FORTRAN (IV CR 63) PROGRAM GENERATED BY THE EXPERIMENTER TO COMPUTE PROTON FLUXES AT AN ARBITRARY POINT IN B, L SPACE APPROPRIATE TO EITHER JANUARY 1, 1963 (SIX ENERGY INTERVAL MODES) OR JULY 1, 1963 (TWO ENERGY THRESHOLD MODES). INPUT TO THE PROGRAM CONSISTS OF SERIES OF COEFFICIENTS OBTAINED FROM LEAST SQUARES FITS OF THE TIME AND B DEPENDENCES OF THE FLUXES OF MIRRORING PROTONS IN EACH OF THE EIGHT ENERGY MODES AT DISCRETE L VALUES BETWEEN 1.2 AND 2.2. CARD DECKS FOR BOTH THE COEFFICIENTS AND THE PROGRAM ITSELF ARE AVAILABLE.

DATA SET NAME- L-SORTED 10-SEC AVERAGED COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 62-068A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/62 TO 10/20/64

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A SINGLE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE

GENERATED BY THE EXPERIMENTER ON A CDC 3600. EACH PHYSICAL RECORD CONTAINS 10 LOGICAL RECORDS OF 27 WORDS (216 CHARACTERS) EACH. TEN-SEC AVERAGED COUNT RATES INTERPOLATED TO DISCRETE L VALUES BETWEEN 1.15 AND 8.20 ARE PRESENTED. DATA FOR ALL DISCRIMINATION STATES AND BACKGROUND MODES FOR ALL DETECTORS ARE PRESENTED AND ARE ORDERED FIRST ON L AND THEN ON B. SPACECRAFT POSITION, ORIENTATION, AND OBSERVATION TIME ARE INCLUDED IN EACH LOGICAL RECORD.

DATA SET NAME- TEN-SEC AVERAGED TIME-ORDERED COUNT  
RATES ON MAGNETIC TAPE

NSSDC ID 62-068A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/62 TO 10/20/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE 7-TRACK, 556-BPI, IBM 7094, BCD MAGNETIC TAPES GENERATED AT NSSDC. THIS DATA SET REPRESENTS A TIME-ORDERED VERSION OF DATA SET 62-068A-03D, EXCEPT THAT THE 1-SEC CUMULATIVE COUNTS OF -03D HAVE NOT BEEN TRANSCRIBED TO DATA SET -03C. EACH PHYSICAL RECORD CONSISTS OF TEN 144-CHARACTER LOGICAL RECORDS. SUCCESSIVE LOGICAL RECORDS CONTAIN DATA TAKEN DURING SUCCESSIVE 12-SEC INTERVALS. THUS, EACH LOGICAL RECORD CONTAINS THE 10-SEC AVERAGED COUNT RATES FOR DETECTOR A AND FOR ALL THE DISCRIMINATION STATES (INCLUDING BACKGROUND COUNTING MODES) OF ONE OF THE OTHER THREE DETECTORS. EPHEMERIS INFORMATION, INCLUDING B AND L, IS INCLUDED IN EACH LOGICAL RECORD. SOME BTL DATA (62-068A-02) ARE ALSO FOUND ON THESE TAPES. TIME COVERAGE EXTENDS FROM LAUNCH TO OCTOBER 20, 1964.

DATA SET NAME- ONE- AND 10-SEC COUNT RATES ON MAGNETIC  
TAPE

NSSDC ID 62-068A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/62 TO 10/20/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE UNBLOCKED 7-TRACK, 556-BPI, BCD MAGNETIC TAPES GENERATED BY THE EXPERIMENTER. EACH 624-CHARACTER LOGICAL RECORD CONTAINS DATA TAKEN BY DETECTOR A AND BY ONE OF THE OTHER THREE DETECTORS DURING ONE 12-SEC INTERVAL. FOR DETECTOR A AND FOR ALL THE DISCRIMINATION STATES (INCLUDING BACKGROUND COUNTING MODES) OF THE OTHER DETECTORS, THE TEN 1-SEC CUMULATIVE COUNTS AND THE ONE 10-SEC AVERAGE COUNTING RATE ARE GIVEN. EPHEMERIS INFORMATION, INCLUDING B AND L, IS INCLUDED IN EACH LOGICAL RECORD. SOME BTL DATA (62-068A-02) ARE ALSO FOUND ON THESE TAPES. TIME COVERAGE EXTENDS FROM LAUNCH TO OCTOBER 20, 1964, BUT THE DATA ARE NOT COMPLETELY CHRONOLOGICALLY ORDERED.

DATA SET NAME- PLOTS OF LOW-ENERGY PROTON COUNT RATES  
VS B AT DISCRETE L VALUES ON MICROFILM

NSSDC ID 62-068A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 05/10/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS, ON ONE REEL OF 35-MM MICROFILM, COPIES OF EXPERIMENTER SUPPLIED PLOTS. EACH PLOT EXHIBITS DETECTOR B PROTON COUNT RATES VS B (MODEL MAGNETIC FIELD MAGNITUDE) AT DISCRETE L VALUES (L BETWEEN 1.5 AND 4.2) IN ONE OF THREE ENERGY INTERVALS (1.1 TO 14, 1.6 TO 7.1, OR 2.25 TO 4.7 MEV). THE COUNT RATES HAVE BEEN CORRECTED FOR TEMPERATURE AND RADIATION DAMAGE EFFECTS AND ARE BASED ON DATA GATHERED BETWEEN LAUNCH AND MAY 10, 1963.

DATA SET NAME- PLOTS OF HIGH-ENERGY PROTON COUNT RATES  
VS B AT DISCRETE L VALUES ON MICROFILM

NSSDC ID 62-068A-03F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/62 TO 09/22/63

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS, ON ONE REEL OF 35-MM MICROFILM, COPIES OF EXPERIMENTER SUPPLIED PLOTS. EACH PLOT EXHIBITS DETECTOR C PROTON COUNT RATES VS B AT DISCRETE L VALUES (L BETWEEN 1.3 AND 3.0) IN ONE OF THREE ENERGY INTERVALS (18.2 TO 25, 25 TO 35, OR 35 TO 63 MEV). THE COUNT RATES HAVE BEEN CORRECTED FOR TEMPERATURE EFFECTS (NO RADIATION DAMAGE CORRECTION NECESSARY) AND ARE BASED ON DATA GATHERED BETWEEN LAUNCH AND SEPTEMBER 22, 1963.

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SPACECRAFT NAME- EXPLORER 17  
OTHER NAMES- AE-A, S 6, 1963-009A

NSSDC ID 63-009A

LAUNCH DATE- 04/03/63 DATE LAST SCIENTIFIC DATA RECORDED- 07/10/63

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 184 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 04/03/63 ORBIT PERIOD- 96.39 MIN.  
APOGEE- 916. KM ALT PERIGEE- 255. KM ALT INCLINATION- 57.626 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 17 WAS A SPIN-STABILIZED SPHERE 0.95 M IN DIAMETER. THE SPACECRAFT

WAS VACUUM SEALED IN ORDER TO PREVENT CONTAMINATION OF THE LOCAL ATMOSPHERE. EXPLORER 17 CARRIED FOUR PRESSURE GAUGES FOR THE MEASUREMENT OF TOTAL NEUTRAL PARTICLE DENSITY, TWO MASS SPECTROMETERS FOR THE MEASUREMENT OF CERTAIN NEUTRAL PARTICLE CONCENTRATIONS, AND TWO ELECTROSTATIC PROBES FOR ION CONCENTRATION AND ELECTRON TEMPERATURE MEASUREMENTS. BATTERY POWER FAILED ON JULY 10, 1963. THREE OF THE FOUR PRESSURE GAUGES AND BOTH ELECTROSTATIC PROBES OPERATED NORMALLY. ONE SPECTROMETER MALFUNCTIONED, AND THE OTHER OPERATED INTERMITTENTLY.

EXPERIMENT NAME- MASS SPECTROMETER

NSSDC ID 63-009A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- C.A. REBER, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 06/01/63

EXPERIMENT BRIEF DESCRIPTION

TWO IDENTICAL DOUBLE-FOCUSING MAGNETIC MASS SPECTROMETERS WERE USED TO MEASURE THE CONCENTRATIONS OF THE MAJOR NEUTRAL PARTICLE CONSTITUENTS OF THE UPPER ATMOSPHERE, NAMELY, ATOMIC AND MOLECULAR OXYGEN, ATOMIC AND MOLECULAR NITROGEN, HELIUM, AND WATER VAPOR. THESE NEUTRAL PARTICLES WERE IONIZED BY ELECTRON BOMBARDMENT. MEASUREMENTS OF THE SIX DIFFERENT ION CURRENTS AND THE TOTAL CURRENT WERE MADE SEQUENTIALLY FOR 4 SEC IN HIGH SENSITIVITY AND 4 SEC IN LOW SENSITIVITY. A PERIOD OF 64 SEC WAS REQUIRED FOR THE ENTIRE MEASUREMENT CYCLE. INCLUDED IN THE CYCLE WAS AN OPERATION TO CORRECT ANY DC DRIFT OF THE ZERO VOLTAGE LEVEL IN THE OUTPUT SIGNAL. ONE SPECTROMETER PRODUCED USELESS DATA DUE TO A MALFUNCTION. THE OTHER DETECTOR SYSTEM EXPERIENCED INTERMITTENT DEGENERATION OF THE AMPLIFIER OUTPUT, AND, CONSEQUENTLY, THE DATA WERE GOOD ONLY DURING CERTAIN PERIODS. THIS DEGENERATION WAS NOT A RESULT OF INSTRUMENT MALFUNCTION BUT OF AN UNEXPECTED SPACECRAFT ATTITUDE WHICH ORIENTED THE SENSOR TOWARD THE SUN AND CAUSED IT TO OVERHEAT. A MORE COMPLETE DESCRIPTION OF THE EXPERIMENT, THE INSTRUMENTATION, AND THE CALIBRATION PROCEDURES CAN BE FOUND IN PLANETARY AND SPACE SCIENCE, VOL. 13, NO. 7, PAGE 617, JULY 1965.

DATA SET NAME- ATMOSPHERIC COMPOSITION DENSITY DATA IN  
TABULAR FORM

NSSDC ID 63-009A-01A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/03/63 TO 06/01/63

DATA SET BRIEF DESCRIPTION

THE ANALYZED DATA SET, WHICH CONTAINS NUMBER DENSITIES OF HELIUM, MOLECULAR NITROGEN, AND ATOMIC OXYGEN BETWEEN 250 KM AND 850 KM, IS IN TABULAR FORM ON SIX PRINTED PAGES OF A PUBLISHED ARTICLE. THE ARTICLE, AUTHORED BY C. A. REBER, THE EXPERIMENTER, AND M. NICOLET, IS IN PLANETARY AND SPACE SCIENCE, VOL. 13, NO. 7, PAGE 617, JULY 1965. IT IS ENTITLED 'INVESTIGATION OF THE

MAJOR CONSTITUENTS OF THE APRIL-MAY 1963 METEOSPHERE BY THE EXPLORER XVII SATELLITE.\* ADDITIONAL INFORMATION GIVEN IN THE REPORT INCLUDES LOCAL TIME, PASS NUMBER, STATION, GEOGRAPHIC POSITION, ALTITUDE, ANGLE OF ATTACK, AND SOLAR AND MAGNETIC INDICES. THE RESULTS FROM 114 4-MIN INTERROGATIONS BY GROUND STATIONS ARE ORDERED BY TIME. DATA ARE AVAILABLE FOR THE PERIODS APRIL 3 TO 22, 1963, AND MAY 20 TO JUNE 1, 1963. THESE PERIODS REPRESENT A COVERAGE OF ABOUT 30 PERCENT BASED ON THE SATELLITE LIFETIME OF 3 MONTHS.

EXPERIMENT NAME- LANGMUIR PROBES

NSSDC ID 63-009A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- L.H. BRACE, NASA-GSFC , GREENBELT, MD.  
N.W. SPENCER, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 07/10/63

EXPERIMENT BRIEF DESCRIPTION

THE EXPLORER 17 EXPERIMENT PAYLOAD INCLUDED TWO INDEPENDENT LANGMUIR PROBE SYSTEMS. ONE OF THE SENSORS WAS USED TO PROVIDE MEASUREMENTS OF THE POSITIVE ION DENSITY, AND THE OTHER MEASURED ELECTRON TEMPERATURE. EACH SYSTEM USED A TWO-ELEMENT SENSOR CONSISTING OF AN OUTER CYLINDRICAL GUARD ELECTRODE 10 CM LONG WHICH WAS CONCENTRIC WITH AN INNER COLLECTOR ELECTRODE 0.056 CM IN DIAMETER AND 23 CM LONG. THE POTENTIALS OF THE ELECTRODES WERE VARIED WITH RESPECT TO THE SATELLITE SHELL. THE ELECTRON TEMPERATURE PROBE WAS SWEEPED AT A RATE OF 10 SWEEPS PER SECOND OVER TWO DIFFERENT VOLTAGE INTERVALS, 0 TO 0.75 V AND 0 TO 1.5 V. THE ION DENSITY PROBE WAS SWEEPED FROM MINUS 3 TO PLUS 2 V IN 2 SEC. THE CURRENTS TO THE COLLECTORS WERE MEASURED AND TELEMETERED. THE ION CONCENTRATION AND ELECTRON TEMPERATURE COULD BE DETERMINED FROM THE CURRENT VS VOLTAGE INFORMATION. THE EXPERIMENT OPERATED NORMALLY FROM LAUNCH UNTIL JULY 10, 1963, WHEN THE SPACECRAFT BATTERIES FAILED.

DATA SET NAME- TABLES OF ELECTRON TEMPERATURES AND ION  
DENSITIES ON MICROFILM

NSSDC ID 63-009A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/03/63 TO 07/10/63

DATA SET BRIEF DESCRIPTION

THE ANALYZED DATA SET, WHICH WAS RECEIVED FROM THE EXPERIMENTER, CONSISTS OF ELECTRON TEMPERATURE AND ION DENSITY VALUES IN TABULAR FORM ON ONE SHORT STRIP OF 35-MM MICROFILM. THE TABLES ALSO INCLUDE TIME (UT AND LOCAL), PASS NUMBER, STATION, GEOGRAPHIC POSITION, ALTITUDE, AND SOLAR AND MAGNETIC INDICES. THE RESULTS FROM 412 4-MIN INTERROGATIONS BY GROUND STATIONS ARE ORDERED BOTH BY STATION AND BY TIME. A DESCRIPTION OF THE DATA IS CONTAINED IN A DATA USERS' NOTE (NSSDC 67-12) ENTITLED 'EXPLORER 17 (1963 9A)

ELECTROSTATIC PROBE EXPERIMENT.\*

EXPERIMENT NAME- PRESSURE GAUGE

NSSDC ID 63-009A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- G.P. NEWTON, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 06/08/63

EXPERIMENT BRIEF DESCRIPTION

TWO REDHEAD (COLD CATHODE) AND TWO BAYARD-ALPERT (HOT FILAMENT) IONIZATION VACUUM GAUGES WERE USED TO MEASURE THE NEUTRAL PARTICLE DENSITY AND AMBIENT PRESSURE OF THE UPPER ATMOSPHERE BETWEEN 260 KM AND 900 KM. THE PRESSURE GAUGES WERE OPERATED FOR 4-MIN PERIODS WHEN THE SATELLITE WAS WITHIN RANGE OF A GROUND TELEMETRY STATION. THE NEUTRAL PARTICLES WERE IONIZED BY ELECTRON BOMBARDMENT, AND THE RESULTING ION CURRENTS WERE DETECTED AND CONVERTED TO VOLTAGES SUITABLE FOR TELEMETRY. THESE TWO TYPES OF SENSORS TOGETHER WERE CAPABLE OF MEASURING OVER THE PRESSURE RANGE  $10^{-10}$  TO  $10^{-12}$  TORR ( $10^{-10}$  TO  $10^{-12}$  MOLECULES/CUBIC CM) TO  $10^{-11}$  TO  $10^{-13}$  TORR ( $10^{-11}$  TO  $10^{-13}$  MOLECULES/CUBIC CM). ONE BAYARD-ALPERT GAUGE SUFFERED A LOSS IN SENSITIVITY, AND NO USEFUL DATA WERE OBTAINED FROM IT. THE REMAINING THREE GAUGES OPERATED NORMALLY AND YIELDED DATA DURING THE PERIOD APRIL 3 TO JUNE 8, 1963. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN PLANETARY AND SPACE SCIENCE, VOL. 13, NO. 7, PAGE 599, JULY 1965.

DATA SET NAME- NEUTRAL DENSITY DATA IN TABULAR FORM

NSSDC ID 63-009A-03A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/03/63 TO 06/08/63

DATA SET BRIEF DESCRIPTION

THE ANALYZED DATA SET, BASED ON IONIZATION VACUUM GAUGE INFORMATION BETWEEN 260 KM AND 900 KM, IS IN PRINTED FORM ON 16 PAGES OF NASA TECHNICAL NOTE TN-D-5447. THE DOCUMENT, ENTITLED 'ATMOSPHERIC DENSITIES MEASURED BY THE EXPLORER 17 DENSITY GAUGES. ANALYSIS OF ERRORS AND THEIR EFFECTS UPON THE MEASUREMENTS,' BY G.P. NEWTON AND R. HOROWITZ, WAS PUBLISHED IN NOVEMBER 1969. IT LISTS, IN TABULAR FORM, THE BEGINNING AND END DENSITIES FOR 4-MIN PASSES OVER TRACKING STATIONS. IN ADDITION, DENSITIES CORRECTED FOR UNCERTAINTIES IN GAS COMPOSITION AND FOR SYSTEMATIC ERRORS ARE ALSO LISTED FOR THESE SAME PASSES. USEFUL DATA WERE OBTAINED FROM THREE OF THE FOUR INDEPENDENT GAUGE SYSTEMS (TWO REDHEAD AND TWO BAYARD-ALPERT GAUGES) FOR 170 PASSES DURING THE PERIOD APRIL 3 TO JUNE 8, 1963. THIS TIME PERIOD REPRESENTS 65 PERCENT OF THE 100-DAY SATELLITE LIFETIME. ONE BAYARD-ALPERT GAUGE SUFFERED A LOSS IN SENSITIVITY AND YIELDED NO USEFUL DATA.

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SPACECRAFT NAME- TELSTAR 2  
OTHER NAMES- A 41. 1963-013A

NSSDC ID 63-013A

LAUNCH DATE- 05/07/63 DATE LAST SCIENTIFIC DATA RECORDED- 05/16/65

AGENCY- AT-T-BTL

SPACECRAFT WEIGHT IN ORBIT- 79.4 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 05/07/63 ORBIT PERIOD- 225.1 MIN.

APOGEE- 10803. KM ALT

PERIGEE- 974. KM ALT

INCLINATION- 42.73 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

TELSTAR 2, PRIMARILY A COMMUNICATIONS SATELLITE, CARRIED AN EXPERIMENT DESIGNED TO MEASURE THE ENERGETIC PROTON AND ELECTRON DISTRIBUTION IN THE VAN ALLEN BELTS. THE SPACECRAFT SPIN AXIS SHORTLY AFTER LAUNCH WAS ABOUT 80 DEG TO THE ECLIPTIC PLANE. THE INITIAL SPIN RATE WAS 180 RPM, AND IT VARIED SLOWLY OVER THE LIFE OF THE SPACECRAFT. TELSTAR 2 WAS ESSENTIALLY IDENTICAL TO THE TELSTAR 1 SATELLITE. IT EMPLOYED TWO TRANSMITTERS, AND DATA WERE TELEMETERED VIA A PCM/FM/AM ENCODER. THE TELEMETRY SEQUENCE REQUIRED ABOUT 1 MIN. TELSTAR 2 DIFFERED FROM TELSTAR 1 BY EMPLOYING PROVISIONS FOR SCIENTIFIC INFORMATION TO BE TRANSMITTED IN REAL TIME VIA THE MICROWAVE TELEMETRY SYSTEM SO THAT TELEMETRY COULD BE OBTAINED AFTER THE 2-YR TIMER HAD TURNED OFF THE VHF BEACON. ON MAY 16, 1965, AT 1403 UT, DURING THE SATELLITE'S 4736 ORBIT, THE VHF TRANSMITTER WAS TURNED OFF. ALL SYSTEMS OPERATED NORMALLY UNTIL THAT TIME. AFTER THAT TIME, A VERY LIMITED AMOUNT OF SCIENTIFIC INFORMATION WAS GATHERED AT ANDOVER, MAINE.

EXPERIMENT NAME- PROTON AND ELECTRON RADIATION

NSSDC ID 63-013A-01

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

INVESTIGATORS- W.L. BROWN, BELL TELEPHONE LAB, MURRAY HILL, N.J.

DATE LAST USEFUL DATA RECORDED- 05/16/65

#### EXPERIMENT BRIEF DESCRIPTION

THREE P-N JUNCTION SOLID-STATE DIODES SEPARATELY MEASURED PROTONS (1) DIRECTIONALLY IN NINE RANGES FROM 2 TO 30 MEV WITH AN APERTURE OF 25-DEG HALF ANGLE, (2) OMNIDIRECTIONALLY FROM 18 TO 28 MEV, AND (3) OMNIDIRECTIONALLY GREATER THAN 50 MEV. A FOURTH P-N JUNCTION DIODE MEASURED ELECTRONS WITH FOUR THRESHOLD RANGES (GREATER THAN 750, 900, 1200, AND 1400 KEV) WITH AN APERTURE OF 20-DEG HALF ANGLE. EACH DIRECTIONAL PROTON ENERGY CHANNEL WAS SAMPLED ONCE EVERY 3 MIN, EACH OF THE TWO OMNIDIRECTIONAL PROTON DETECTORS WAS SAMPLED ONCE PER MINUTE, AND EACH OF THE ELECTRON ENERGY CHANNELS WAS SAMPLED ONCE EVERY 2 MIN. ACCUMULATION TIMES EXCEEDED THE SPACECRAFT SPIN PERIOD. THE EXPERIMENT OPERATED THROUGHOUT THE



SPACECRAFT LIFE.

DATA SET NAME- REDUCED ELECTRON AND PROTON DATA ON  
MAGNETIC TAPE

NSSDC ID 63-013A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/07/63 TO 05/07/65

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, GENERATED AT BELL TELEPHONE LABORATORIES, ARE ON EIGHT BESYS, 800-BPI, 7-TRACK, BCD, IBM 7094, ODD PARITY MAGNETIC TAPES FROM THE BTL EXPERIMENT. THE RECORD LENGTH IS 64 BINARY WORDS. EACH RECORD CONTAINS (1) EPHEMERIS AND TIME INFORMATION, (2) MAGNETIC FIELD DATA, (3) MCILWAIN L, AND (4) SATELLITE STATE DATA SUCH AS SKIN TEMPERATURE, DETECTOR TEMPERATURE, ETC. ALSO PRESENTED ARE (1) COUNTS FROM THE ELECTRON DETECTOR IN EACH BIAS MODE, WITH B, L, AND GAMMA VALUES (WHERE GAMMA IS THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE MODEL MAGNETIC FIELD DIRECTION) INTERPOLATED TO THE TIME WHEN THE MEASUREMENT WAS MADE, AND (2) COUNTS FROM THE TWO PROTON DETECTORS IN EACH BIAS MODE, WITH SIMILAR B, L, AND GAMMA VALUES. THE DATA ARE TIME ORDERED.

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SPACECRAFT NAME- TIROS 7  
OTHER NAMES- 1963-024A, A 52

NSSDC ID 63-024A

LAUNCH DATE- 05/19/63 DATE LAST SCIENTIFIC DATA RECORDED- 12/31/65

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 135 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 08/19/63 ORBIT PERIOD- 97.42 MIN.  
APOGEE- 649. KM ALT PERIGEE- 621. KM ALT INCLINATION- 58.236 DEGREES

SPACECRAFT BRIEF DESCRIPTION

TIROS 7 (TELEVISION AND INFRARED OBSERVATION SATELLITE) WAS A SPIN-STABILIZED METEOROLOGICAL SPACECRAFT DESIGNED TO TEST EXPERIMENTAL TELEVISION TECHNIQUES AND INFRARED EQUIPMENT. IT WAS LAUNCHED INTO A NEARLY CIRCULAR ORBIT 630 KM HIGH. THE SPACECRAFT PERFORMED NORMALLY UNTIL DECEMBER 31, 1965, AND SPORADICALLY UNTIL OCTOBER 1967. IT WAS ABANDONED JUNE 3, 1968.

EXPERIMENT NAME- LOW-RESOLUTION OMNIDIRECTIONAL  
RADIOMETER

NSSDC ID 63-024A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

INVESTIGATORS- V.E. SUOMI, U OF WISCONSIN, MADISON, WIS.

DATE LAST USEFUL DATA RECORDED- 09/13/63

EXPERIMENT BRIEF DESCRIPTION

THE TIROS 7 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER CONSISTED PRIMARILY OF TWO SETS OF BOLOMETERS IN THE FORM OF HOLLOW ALUMINUM HEMISPHERES MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT. THE BOLOMETERS WERE THERMALLY ISOLATED FROM BUT IN CLOSE PROXIMITY TO REFLECTING MIRRORS SO THAT THE HEMISPHERES BEHAVED VERY MUCH LIKE ISOLATED SPHERES IN SPACE. THE EXPERIMENT WAS DESIGNED TO MEASURE THE AMOUNT OF SOLAR ENERGY ABSORBED, REFLECTED, AND EMITTED BY THE EARTH AND ITS ATMOSPHERE. ONE BOLOMETER IN EACH SET WAS PAINTED BLACK, AND ONE WAS PAINTED WHITE. BOTH HAD A HIGH ABSORPTIVITY TO THE INFRARED RADIATION EMITTED FROM THE EARTH. THE BLACK BOLOMETER ALSO HAD A HIGH ABSORPTIVITY FOR SOLAR RADIATION, WHICH PROVIDED FOR SEPARATION OF THE REFLECTED AND EMITTED RADIATION. THE SENSOR TEMPERATURES WERE MEASURED BY THERMISTORS FASTENED TO THE INSIDE OF THE HOLLOW HEMISPHERES. THE SENSOR TEMPERATURES, TAKEN EVERY 29 SEC, WERE AN AVERAGE OF TWO TEMPERATURES FROM THE MATCHED THERMISTORS. THE EXPERIMENT WAS A SUCCESS, AND USABLE DATA WERE RECEIVED FROM JUNE 19, 1963, TO SEPTEMBER 13, 1963. IDENTICAL EXPERIMENTS WERE FLWEN ON TIROS 3 AND 4, AND A SIMILAR ONE WAS CARRIED ON EXPLORER 7.

DATA SET NAME- LOW-RESOLUTION OMNIDIRECTIONAL  
RADIOMETER TEMPERATURE TAPES

NSSDC ID 63-024A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/15/63 TO 08/29/63

DATA SET BRIEF DESCRIPTION

THE TIROS 7 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER DATA ARE AVAILABLE ON NINE MAGNETIC TAPES PRODUCED ON AN IBM 7094 COMPUTER. THESE 7-TRACK, 556-BPI, BCD TAPES CONTAIN BOTH THE BLACK AND WHITE SENSOR TEMPERATURE VALUES OBTAINED FROM THE HEMISPHERIC BOLOMETERS. EACH TEMPERATURE VALUE IS LOCATED WITH RESPECT TO TIME, LATITUDE, AND LONGITUDE.

EXPERIMENT NAME- SCANNING RADIOMETER

NSSDC ID 63-024A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- R.M. RADDS, NASA-GSFC, GREENBELT, MD.  
J.D. BARKSDALE, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 06/19/65

EXPERIMENT BRIEF DESCRIPTION

THE SCANNING RADIOMETER OF THE TIROS 7 METEOROLOGICAL SATELLITE MEASURED

THE EMITTED AND REFLECTED RADIATION OF THE EARTH AND ITS ATMOSPHERE. THE RADIOMETER SCANNED THE EARTH AND SPACE AS THE SATELLITE SPUN ABOUT ITS AXIS. FIVE RADIOMETERS, USING BOLCMETER DETECTORS AND FILTERS TO LIMIT THE SPECTRAL RESPONSE, PROVIDED COMPREHENSIVE DATA BY MEASURING RADIATION INTENSITIES IN SELECTED PORTIONS OF THE INFRARED SPECTRUM. THE SPECTRAL BANDWIDTH OF EACH RADIOMETER (IN MICRONS) AND ITS ASSOCIATED PARAMETER WERE AS FOLLOWS -- CHANNEL 1, 14.8 TO 15.5 (CARBON DIOXIDE ABSORPTION), CHANNEL 2, 8.0 TO 12.0 (ATMOSPHERIC WINDOW), CHANNEL 3, 0.2 TO 6.0 (REFLECTED SOLAR RADIATION), CHANNEL 4, 7.5 TO 30 (TERRESTRIAL RADIATION), AND CHANNEL 5, 0.55 TO 0.75 (RESPONSE OF TV SYSTEM). INITIAL PERFORMANCE WAS EXCELLENT. THE MAJOR LIMITATION OF THE EXPERIMENT IS THE UNCERTAINTY IN THE ABSOLUTE VALUES OF THE MEASUREMENTS, RESULTING FROM DEGRADATION OF THE SENSORS AND, ALSO, FROM ELECTRONIC DEGRADATION. IN UTILIZING MEASUREMENTS OVER EXTENDED PERIODS, CHANNEL 2 AND 5 DATA SHOULD BE USED INSTEAD OF CHANNEL 4 AND 3 DATA, RESPECTIVELY, WHEREVER POSSIBLE BECAUSE OF THE SUPERIOR STABILITY CHARACTERISTICS OF THE FORMER TWO CHANNELS. FOR STUDIES INVOLVING RELATIVE MEASUREMENTS OVER A SHORT PERIOD OF TIME, DATA FROM CHANNELS 4, 1, AND 3 ARE CONSIDERED TO BE VALID FROM LAUNCH TO FEBRUARY 23, 1964, NOVEMBER 14, 1964, AND DECEMBER 25, 1964, RESPECTIVELY.

DATA SET NAME- FINAL METEOROLOGICAL RADIATION TAPES  
(FMRT)

NSSDC ID 63-024A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/19/63 TO 06/19/65

DATA SET BRIEF DESCRIPTION

THE 691 TIROS 7 FINAL METEOROLOGICAL RADIATION TAPES (FMRT) ARE THE PRODUCT OF AN IBM 7094 COMPUTER PROGRAM WHOSE INPUT IS THE ATTITUDE/ORBITAL DATA, DIGITAL RADIATION DATA, AND THE TIROS RADIOMETER CALIBRATION PACKAGE. THE TAPES ALSO INCLUDE GEOGRAPHICAL LOCATIONS ASSOCIATED WITH THE RADIATION MEASUREMENTS, SOLAR EPHEMERIS, AND SATELLITE TEMPERATURE. THESE 7-TRACK, 556-BPI, BINARY TAPES CONTAIN THE ORIGINAL REDUCED DATA IN THEIR ENTIRETY. EACH TAPE CONTAINS APPROXIMATELY 1 DAY OF DATA (EIGHT ORBITS). THE EXACT FORMAT OF THE FMRT TAPES IS DESCRIBED IN THE 'TIROS VII RADIATION DATA CATALOG AND USERS' MANUAL' (DATA SET 63-024A-02B).

DATA SET NAME- RADIATION DATA CATALOG AND USERS' MANUAL

NSSDC ID 63-024A-02B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 06/19/63 TO 06/19/65

DATA SET BRIEF DESCRIPTION

THE FOUR-VOLUME 'TIROS VII RADIATION DATA CATALOG AND USERS' MANUAL' FULLY DESCRIBES THE TIROS 7 SCANNING RADIOMETER, CALIBRATION, DATA PROCESSING, FINAL METEOROLOGICAL RADIATION TAPE (FMRT) FORMAT, AND RADIOMETER PERFORMANCE. THE CATALOG/MANUAL ALSO CONTAINS, IN TWO FORMS, DOCUMENTATION

OF EACH ORBIT OF SUCCESSFULLY REDUCED RADIATION DATA. ONE METHOD OF PRESENTATION IS THE INDEX OF THE FMRT, AND THE OTHER IS A SUBPOINT TRACK SUMMARY OF AVAILABLE RADIATION DATA IN DIAGRAMMATIC FORM. THESE VOLUMES DESCRIBE AND INDEX DATA ON THE FMRT THAT ARE AVAILABLE FROM JUNE 19, 1963, TO JUNE 19, 1965.

EXPERIMENT NAME- LANGMUIR PROBE

NSSDC ID 63-024A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- L.H. BRACE, NASA-GSFC, GREENBELT, MD.  
N.W. SPENCER, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 07/14/63

EXPERIMENT BRIEF DESCRIPTION

A LANGMUIR PROBE WAS USED TO MEASURE ELECTRON DENSITY AND TEMPERATURE. THE CYLINDRICAL PROBE CONSISTED OF TWO CONCENTRIC ELECTRODES. THE INNER ELECTRODE, WHICH WAS 0.056 CM IN DIAMETER AND 23 CM LONG, WAS USED AS A COLLECTOR. THE OUTER ELECTRODE SERVED AS A GUARD ELECTRODE AND WAS 0.168 CM IN DIAMETER AND 10 CM LONG. THE PROBE WAS SWEEPED THROUGH THE VOLTAGE RANGE 0 TO 1.5 V IN 2 SEC. THE CURRENT AT THE COLLECTOR WAS MEASURED AS THE VOLTAGE WAS VARIED, AND THE SIGNAL WAS STORED ON A TAPE RECORDER AND PLAYED BACK UPON INTERROGATION BY A GROUND STATION. THIS EXPERIMENT AND THE INFRARED EXPERIMENT TIME SHARED A SUBCARRIER OSCILLATOR, AND THE TELEMETRY FORMAT SEQUENCE CONSISTED OF 18 SEC OF PROBE DATA AND 12 SEC OF IR DATA. THE EXPERIMENT OPERATED NORMALLY FROM LAUNCH UNTIL JULY 14, 1963, WHEN AN ELECTRICAL FAILURE PREVENTED THE TAPE RECORDER FROM OPERATING NORMALLY. ALTHOUGH THE EXPERIMENT WAS DESIGNED TO ALLOW FOR COMPUTER DETERMINATION OF ELECTRON TEMPERATURE VALUES, THIS WAS IMPRACTICAL BECAUSE OF THE MARGINAL RESOLUTION OF THE DATA AND THE LOW INFORMATION RATE OF THE SUBCARRIER, I.E., THERE WERE NOT ENOUGH DATA POINTS PER SECOND.

DATA SET NAME- TABLE OF ELECTRON DENSITIES ON MICROFILM

NSSDC ID 63-024A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/19/63 TO 07/09/63

DATA SET BRIEF DESCRIPTION

THE ANALYZED DATA SET, WHICH WAS RECEIVED FROM THE EXPERIMENTER, PRESENTS ELECTRON DENSITY DATA IN TABULAR FORM ON ONE REEL OF 35-MM MICROFILM. OTHER TYPES OF INFORMATION GIVEN ARE TIME (UT AND LOCAL), PASS NUMBER, STATION, LOCATION (GEOGRAPHIC AND GEOMAGNETIC), ALTITUDE, ELECTRON CURRENT, VOLTS, MAGNETIC LATITUDE, DIP ANGLE, AND SOLAR AND MAGNETIC INDICES. THERE IS APPROXIMATELY ONE DATA POINT PER MINUTE. A DESCRIPTION OF THE DATA IS CONTAINED IN A DATA USERS' NOTE (NSSDC 67-24) ENTITLED 'TIROS 7 (1963 24A)

ELECTROSTATIC PROBE EXPERIMENT.'

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SPACECRAFT NAME- 1963-038C  
OTHER NAMES- SN 39, SE 1

NSSDC ID 63-038C

LAUNCH DATE- 09/28/63 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- US NAVY SPACECRAFT WEIGHT IN ORBIT- 59 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 09/28/63 ORBIT PERIOD- 107.5 MIN.  
APOGEE- 1147. KM ALT PERIGEE- 1067. KM ALT INCLINATION- 89.94 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE MAGNETICALLY ALIGNED 1963-038C SPACECRAFT WAS DESIGNED TO MEASURE  
ENERGETIC CHARGED PARTICLES, MAGNETIC FIELDS, AND THE SOLAR SPECTRUM AND TO  
ACQUIRE GEODETIC DATA. SINCE AUGUST 1969, THE SATELLITE, WHICH ATTAINED A  
NEARLY CIRCULAR POLAR ORBIT, HAS SAMPLED ITS ENVIRONMENT ONLY INFREQUENTLY.

EXPERIMENT NAME- ENERGETIC ELECTRON AND PROTON  
DETECTORS

NSSDC ID 63-038C-01

ORIGINAL EXPERIMENT INSTITUTION- APPLIED PHYSICS LAB

INVESTIGATORS- C.O. BOSTROM, APPLIED PHYSICS LAB , SILVER SPRING, MD.  
D.J. WILLIAMS, NOAA , BOULDER, COLO.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE CHARGED PARTICLE EXPERIMENT ON 1963-038C CONSISTED OF AN ARRAY OF  
SOLID-STATE DETECTORS. FIVE DETECTORS COMPRISED AN ELECTRON SPECTROMETER  
THAT MEASURED THE DIRECTIONAL INTENSITY OF ELECTRONS WITH ENERGIES GREATER  
THAN 0.28, 1.2, 2.4, AND 3.6 MEV. EACH OF TWO PROTON SPECTROMETERS UTILIZED  
TWO SENSORS IN VARIOUS COMBINATIONS TO MEASURE THE DIRECTIONAL INTENSITY OF  
PROTONS IN THE ENERGY RANGES 1.2 TO 2.2 MEV, 2.2 TO 8.5 MEV, 8.5 TO 25 MEV,  
AND 25 TO 100 MEV. THREE OMNIDIRECTIONAL (2 PI) DETECTORS MEASURED THE SUM  
OF ELECTRON AND PROTON INTENSITIES (IE AND IP) ACCORDING TO -- IE (E  
GREATER THAN .28 MEV) PLUS IP (E GREATER THAN 2.2 MEV), IE (E GREATER THAN  
.41 MEV) PLUS IP (E GREATER THAN 8.5 MEV), AND IE (E GREATER THAN 1.8 MEV)  
PLUS IP (E GREATER THAN 25 MEV). THE ELECTRON SPECTROMETER AND ONE PROTON  
SPECTROMETER WERE ORIENTED WITH THEIR AXES NORMAL TO THE GEOMAGNETIC FIELD.  
ALL OTHER DETECTORS WERE PARALLEL TO THE FIELD LOOKING UPWARD WHEN IN THE  
NORTHERN HEMISPHERE. MOST DETECTORS WERE SAMPLED 22.9 TIMES PER MINUTE. THE  
LOWEST ENERGY OMNIDIRECTIONAL DETECTOR WAS SAMPLED 45.8 TIMES PER MINUTE.  
EXCEPT FOR THE GREATER THAN 3.6-MEV ELECTRON SPECTROMETER DETECTOR, WHICH  
HAS BEEN UNUSABLE MOST OF THE TIME DUE TO NOISE, AND ONE OF THE PROTON

SPECTROMETERS, WHICH WAS INTERMITTENT FOR PERIODS DURING THE FIRST MONTH, THE EXPERIMENT HAS WORKED WELL FROM LAUNCH TO PRESENT (JANUARY 1971). SINCE SEPTEMBER 1969, DATA HAVE BEEN ACQUIRED ONLY INFREQUENTLY AND ON SPECIAL EXPERIMENTER REQUEST.

DATA SET NAME- REDUCED PROTON AND ELECTRON COUNT RATES  
ON TAPE

NSSDC ID 63-038C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/28/63 TO 03/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ABOUT 430 MAGNETIC TAPES (AS OF APRIL 1971) AS RECEIVED FROM THE EXPERIMENTER. EACH TAPE IS 7-TRACK, WRITTEN AT 556 BPI, ON AN IBM 7094 IN BINARY MODE. THE DATA ARE ORDERED WITHIN A PASS OVER A GIVEN RECEIVING STATION, BUT THE PASSES ARE NOT CHRONOLOGICALLY ORDERED. COUNT RATES WITH DEAD-TIME CORRECTIONS AND STATISTICAL UNCERTAINTIES ARE GIVEN FOR EACH DETECTOR. ORBIT INFORMATION, INCLUDING B (BOTH COMPUTED AND OBSERVED) AND L, IS ALSO GIVEN. AT PRESENT, THE DATA ON HAND COVER THE PERIOD SEPTEMBER 1963 TO MARCH 1967.

DATA SET NAME- INDEX TO REDUCED PROTON AND ELECTRON  
COUNT RATE DATA TAPES

NSSDC ID 63-038C-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/28/63 TO 03/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS TWO 7-TRACK, 556-BPI, BCD MAGNETIC TAPES INDEXING THE CONTENTS OF DATA SET 63-038C-01A IN THE SEQUENCE OF THAT DATA SET. THESE TAPES WERE GENERATED BY NSSDC PERSONNEL AND CONTAIN START AND STOP TIMES OF THE SATELLITE PASSES OVER RECEIVING STATIONS AS WELL AS SATELLITE POSITIONAL INFORMATION.

DATA SET NAME- TIME-ORDERED INDEX TO REDUCED PROTON AND  
ELECTRON COUNT RATE DATA TAPES

NSSDC ID 63-038C-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/28/63 TO 03/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS, ON TWO 7-TRACK, 556-BPI, BCD MAGNETIC TAPES, THE SAME INFORMATION AS FOUND IN DATA SET 63-038C-01B. IN THIS DATA SET, HOWEVER, THE PASSES ARE CHRONOLOGICALLY ORDERED.

DATA SET NAME- TIME-ORDERED REDUCED PROTON AND ELECTRON  
COUNT RATES ON TAPE

NSSDC ID 63-038C-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/28/63 TO 12/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS, ON 103 MAGNETIC TAPES, THE SAME INFORMATION (WITHOUT OBSERVED B VALUES BUT WITH EXTENDED TIME COVERAGE) AS THAT FOUND IN DATA SET 63-038C-01A. EACH TAPE IS 9 TRACK, WRITTEN AT 800 BPI ON AN IBM 360 IN BINARY MODE. IN THIS DATA SET, THE DATA ARE CHRONOLOGICALLY ORDERED AND ARE PACKED MORE EFFICIENTLY ON THE TAPES. AS OF APRIL 1971, THE TIME COVERAGE OF THIS DATA SET EXTENDED FROM SEPTEMBER 1963 TO DECEMBER 1968. LATER TIME COVERAGE MAY BE INCLUDED AS IT BECOMES AVAILABLE.

DATA SET NAME- INDEX TO TIME-ORDERED REDUCED PROTON AND  
ELECTRON COUNT RATE DATA TAPES

NSSDC ID 63-038C-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/28/63 TO 12/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE TAPE PER YEAR OF DATA, FOR A TOTAL OF SIX TAPES. EACH 9-TRACK, 800-BPI, IBM 360, BINARY TAPE IS AN INDEX OF THE INFORMATION CONTAINED IN DATA SET 63-038C-01D. START AND STOP TIMES FOR INDIVIDUAL PASSES ARE LISTED CHRONOLOGICALLY.

DATA SET NAME- PLOTS OF PARTICLE COUNT RATES VS TIME OR  
VS B AT DISCRETE L ON MICROFILM

NSSDC ID 63-038C-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/28/63 TO 12/31/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM CONTAINING EXPERIMENTER GENERATED PLOTS OF RAW COUNT RATE DATA (EXCEPT ELECTRONS ABOVE 3.6 MEV) FROM ALL DETECTORS. IN SOME PLOTS, COUNT RATES ARE GIVEN VS TIME AT DISCRETE L VALUES BETWEEN 1.2 AND 20 AND WITHIN A FIXED RANGE OF B FOR EACH L. IN OTHER PLOTS, COUNT RATES ARE GIVEN VS B AT DISCRETE L VALUES BETWEEN 1.2 AND 20 FOR ONE 15-DAY INTERVAL IN EACH OF 5 YR. THE PLOTS COVER THE PERIOD SEPTEMBER 28, 1963, THROUGH DECEMBER 31, 1967. PLOTS FOR SUBSEQUENT TIMES MAY BECOME AVAILABLE LATER.

DATA SET NAME- ELECTRON COUNT RATE PLOTS ON MICROFILM

NSSDC ID 63-038C-016

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/25/63 TO 04/25/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT GIVES THE COUNT RATES OF ELECTRONS ABOVE 280 KEV AND 1.2 MEV PLOTTED VS TIME. THESE PLOTS ARE PRESENTED AT DISCRETE L VALUES BETWEEN 2.6 AND 8.0 (280 KEV) OR 2.6 AND 4.5 (1.2 MEV). DAYSIDE AND NIGHTSIDE DATA ARE DISTINGUISHABLE. DST AND KP VALUES ARE ALSO PLOTTED. THE PLOTS WERE GENERATED BY D.J. WILLIAMS, ONE OF THE INVESTIGATORS FOR 63-038C-01.

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SPACECRAFT NAME- EXPLORER 18

NSSDC ID 63-046A

OTHER NAMES- IMP-A, IMP 1, 1963-046A

LAUNCH DATE- 11/27/63

DATE LAST SCIENTIFIC DATA RECORDED- 05/10/65

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT- 62.4 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 11/27/63 ORBIT PERIOD- 5583 MIN.

APOGEE-195552. KM ALT

PERIGEE- 197. KM ALT INCLINATION- 33.34 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 18 (IMP 1) WAS A SOLAR CELL AND CHEMICAL BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 1020, A SPIN RATE OF 22 RPM, AND A SPIN DIRECTION OF 115 DEG RIGHT ASCENSION AND -25 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9-SEC DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. THE SPACECRAFT PERFORMED NORMALLY UNTIL MAY 30, 1964, THEN INTERMITTENTLY UNTIL MAY 10, 1965, WHEN IT WAS ABANDONED.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID 63-046A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/21/63 TO 12/30/64

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF SIX 7-TRACK, 556-BPI, IBM 7094, BINARY MAGNETIC



TAPES PROVIDED BY N.F. NESS. THE TAPES LIST THE FOLLOWING INFORMATION AT 5-MIN INTERVALS -- (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE IMP 1 SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT.

EXPERIMENT NAME- RETARDING POTENTIAL ANALYZER

NSSDC ID 63-046A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- G.P. SERBU, NASA-GSFC, GREENBELT, MD.  
E.J.R. MAIER, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 11/27/63

#### EXPERIMENT BRIEF DESCRIPTION

THE RETARDING POTENTIAL ANALYZER WAS A THREE-ELEMENT PLANAR FARADAY CUP. IT WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS AND HAD AN EFFECTIVE LOOK ANGLE OF 5 STER. COARSE AND FINE RESOLUTION MODES WERE PROGRAMMED FOR BOTH IONS AND ELECTRONS. THESE MODES CONSISTED OF 15 STEPS EACH FOR RETARDING VOLTAGES OF 0 TO 28 V AND 0 TO 100 V. THE ENTIRE ION AND ELECTRON SEQUENCE WAS REPEATED ONCE EVERY 10.52 MIN, AND EACH 15-STEP SPECTRAL ANALYSIS REQUIRED 5.4 SEC. THE EXPERIMENT OPERATED FROM LAUNCH FOR ABOUT 20 HR WHEN FAILURE OF A MECHANICAL PROGRAMMER SWITCH TERMINATED OPERATIONS. THE DATA WERE ADVERSELY AFFECTED BY SECONDARY ELECTRONS.

DATA SET NAME- SEMILOG PLOTS OF COLLECTOR CURRENT VS  
RETARDING POTENTIAL VOLTAGE ON MICROFILM

NSSDC ID 63-046A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 11/27/63

#### DATA SET BRIEF DESCRIPTION

THESE ELECTROSTATIC ANALYZER DETECTOR DATA CONSIST OF 100 PLOTS (ON SEMILOG PAPER), ON ONE REEL OF 35-MM MICROFILM, OF CALIBRATED COLLECTOR CURRENT IN AMPS VS RETARDING POTENTIAL VOLTAGE. THE PLOTS ARE FOR ALTITUDES FROM 6280 TO 193,885 KM AND COVER APPROXIMATELY 20 HR OF CONTINUOUS DATA. EACH SPECTRUM IS PLOTTED ON A SEPARATE PAGE, AND DATA CONTAMINATED BY SOLAR UV BACKGROUND OR OTHER INTERFERENCE EFFECTS NOT INDICATED BY INSTRUMENT CALIBRATION CURVES HAVE NOT BEEN REMOVED. MOST DATA HAVE BEEN THUS AFFECTED. DATA FOR POSITIVE IONS AND ELECTRONS IN THE TWO RETARDING POTENTIAL RANGES 0 TO 28 V AND 0 TO 100 V ARE INCLUDED.

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID 63-046A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- N.F. NESS, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 05/30/64

EXPERIMENT BRIEF DESCRIPTION

EACH OF TWO UNIAXIAL FLUXGATE MAGNETOMETERS, HAVING DYNAMIC RANGES OF PLUS OR MINUS 40 GAMMAS, SAMPLED THE MAGNETIC FIELD 30 TIMES WITHIN EACH OF SIX 4.8-SEC INTERVALS EVERY 5.46 MIN. DETECTOR SENSITIVITIES WERE PLUS OR MINUS 0.25 GAMMA, AND DIGITIZATION UNCERTAINTY WAS PLUS OR MINUS 0.40 GAMMA. A RUBIDIUM VAPOR MAGNETOMETER WAS USED TO CALIBRATE THE FLUXGATES BUT DID NOT PRODUCE AN INDEPENDENTLY USEFUL DATA SET. THE FLUXGATES FUNCTIONED NORMALLY THROUGHOUT THE USEFUL LIFE OF THE SATELLITE.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON TAPE

NSSDC ID 63-046A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/27/63 TO 05/30/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO 7-TRACK, 556-BPI, BINARY MAGNETIC TAPES WRITTEN ON AN IBM 7094 COMPUTER. THE TIME-ORDERED, ANALYZED, FLUXGATE MAGNETOMETER DATA ARE AS RECEIVED FROM THE EXPERIMENTER -- 5.46-MIN AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM. THE TIME COVERAGE EXTENDS FROM NOVEMBER 27, 1963, THROUGH MAY 30, 1964, WITH 90 PERCENT COVERAGE. INCOMPLETE EPHEMERIS INFORMATION (RADIAL DISTANCE ONLY) IS CONTAINED ON THE TAPES.

DATA SET NAME- 5.46-MIN VECTOR MAGNETIC FIELD DATA  
MERGED WITH EPHEMERIS DATA ON TAPE

NSSDC ID 63-046A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/27/63 TO 05/30/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPE GENERATED AT NSSDC. THE FLUXGATE DATA CONTAINED IN DATA SET 63-046A-02A ARE MERGED WITH COMPLETE EPHEMERIS DATA GIVEN IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON REFORMATTED TAPE

NSSDC ID 63-046A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/27/63 TO 05/30/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPE ON WHICH THE DATA OF DATA SET 63-046A-02A HAVE BEEN BLOCKED 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES WERE GENERATED AT NSSDC.

DATA SET NAME- HOURLY AVERAGED VALUES OF INTERPLANETARY  
MAGNETIC FIELD DATA ON TAPE

NSSDC ID 63-046A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/27/63 TO 02/15/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A SINGLE 9-TRACK, 800-BPI, BCD MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM. ONLY DATA OBTAINED IN INTERPLANETARY SPACE ARE INCLUDED. THE PERIOD NOVEMBER 27, 1963, TO FEBRUARY 15, 1964, IS COVERED WITH AT LEAST 80 PERCENT COMPLETENESS.

DATA SET NAME- HOURLY AVERAGED VALUES OF INTERPLANETARY  
MAGNETIC FIELD DATA ON MICROFILM

NSSDC ID 63-046A-02E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/27/63 TO 02/15/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT LISTS THE CONTENTS OF DATA SET 63-046A-02D.

DATA SET NAME- HOURLY AVERAGED VALUES OF MAGNETOSPHERIC  
MAGNETIC FIELD DATA ON TAPE

NSSDC ID 63-046A-02F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/26/64 TO 05/26/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 9-TRACK, 800-BPI, BCD MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR REPRESENTATIONS IN SOLAR MAGNETOSPHERIC COORDINATES. ONLY HOURLY AVERAGES WITHIN THE MAGNETOSPHERE ARE INCLUDED.

DATA SET NAME- HOURLY AVERAGED VALUES OF MAGNETOSPHERIC  
MAGNETIC FIELD DATA ON MICROFILM

NSSDC ID 63-046A-02G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/28/64 TO 05/26/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT LISTS THE CONTENTS OF DATA SET 63-046A-02F.

EXPERIMENT NAME- COSMIC-RAY RANGE VS ENERGY LOSS

NSSDC ID 63-046A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.

C.Y. FAN, U OF ARIZONA , TUCSON, ARIZ.

G. GLOECKLER, U OF MARYLAND , COLLEGE PARK, MD.

DATE LAST USEFUL DATA RECORDED- 10/15/64

EXPERIMENT BRIEF DESCRIPTION

A CHARGED PARTICLE SOLID-STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY RANGE IS PROPORTIONAL TO  $Z^2/A$  FOR PROTONS 0.9 TO 190 MEV, 6.5 TO 190 MEV, 19 TO 190 MEV, AND 90 TO 190 MEV) AND CHARGE SPECTRA ( $Z_{\text{LE}}/6$ ). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 2 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR ACCUMULATIONS. FROM LAUNCH UNTIL OCTOBER 15, 1964, A MALFUNCTION LIMITED ALPHA STUDIES TO PARTICLES OF  $E$  GREATER THAN 30 MEV. NO USEFUL INFORMATION WAS RECEIVED AFTER OCTOBER 15, 1964.

DATA SET NAME- REDUCED COUNT RATE AND PULSE HEIGHT  
ANALYSIS DATA ON MAGNETIC TAPE

NSSDC ID 63-046A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 06/07/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE ORIGINAL REDUCED COUNT RATE AND PULSE HEIGHT ANALYSIS DATA ON SIX 7-TRACK MAGNETIC TAPES. THE TAPES WERE WRITTEN ON AN IBM 7090 COMPUTER AT 556 BPI IN BINARY FORMAT, ODD PARITY, WITH 36-BIT WORDS (SIX CHARACTERS PER WORD). THE DATA ARE TIME ORDERED FOR THE PERIOD NOVEMBER 27, 1963, TO JUNE 7, 1964, AND CONTAIN NO ORBIT/ATTITUDE INFORMATION. EACH TAPE CONTAINS A NUMBER OF PHYSICAL RECORDS, EACH OF WHICH IS 804 WORDS (4824 CHARACTERS) LONG. EACH PHYSICAL RECORD CONTAINS SIX 134-WORD LOGICAL RECORDS. EACH TAPE CONTAINS ONE FILE. THESE DATA ARE ALSO AVAILABLE IN A MORE COMPACT FORM IN DATA SETS 63-046A-03C (COUNT ACCUMULATION DATA) AND 63-046A-03D (PULSE HEIGHT DATA).

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) ON  
MICROFILM

NSSDC ID 63-046A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 05/30/64

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF CALCOMP COUNT RATE PLOTS FOR THE TELESCOPE SENSOR COMBINATIONS (D1, D1D2, D1D2D3, AND D1D2D3D4) WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.9 TO 190 MEV, 6.5 TO 190 MEV, 19 TO 190 MEV, AND 90 TO 190 MEV. EACH PLOT GIVES THE COUNT RATE (LOGARITHMIC) VS TIME (DAY NUMBER) FOR ONE SOLAR ROTATION. THE PLOTS ARE ON ONE REEL OF 35-MM MICROFILM THAT CONTAINS A TOTAL OF 32 PLOTS. THERE ARE EIGHT PLOTS FOR EACH OF THE FOUR SENSOR COMBINATIONS. THE TIME INTERVAL COVERED IS FROM SOLAR ROTATION NUMBER 1783 (NOVEMBER 27, 1963) THROUGH 1790 (MAY 30, 1964).

DATA SET NAME- REDUCED COUNT ACCUMULATION DATA ON  
MAGNETIC TAPE

NSSDC ID 63-046A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 06/07/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED COUNT ACCUMULATIONS ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT

800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 204 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 48 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE ACCUMULATIONS -- D1, D1D2 NOT D3, D1D2D3 NOT D4, AND D1D2D3D4 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190 MEV, 6.5 TO 190 MEV, 19 TO 190 MEV, AND 90 TO 190 MEV. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION AND DATA QUALITY INFORMATION. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN, AND EACH ACCUMULATION WAS ABOUT 40 SEC LONG. THE ACCUMULATION DATA IN THIS DATA SET ARE A REFORMATTED AND PREFERRED VERSION OF THOSE IN DATA SET 63-046A-03A.

DATA SET NAME- REDUCED PULSE HEIGHT ANALYZER DATA ON  
MAGNETIC TAPE

NSSDC ID 63-046A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 06/07/64

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON ONE 7-TRACK, GDD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 200 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 48 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA -- D1 AND D3 DETECTOR ELEMENT PULSE HEIGHTS (CORRESPONDING TO INCIDENT PROTON ENERGY THRESHOLDS OF 0.9 AND 19 MEV, RESPECTIVELY), TIME OF OBSERVATION, ORBIT NUMBER, AND DATA QUALITY INFORMATION. THE OUTPUT FROM THE TWO 128-CHANNEL ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR COUNT RATE DATA. THE PULSE HEIGHT DATA IN THIS DATA SET ARE A REFORMATTED AND PREFERRED VERSION OF THOSE IN DATA SET 63-046A-03A.

EXPERIMENT NAME- COSMIC RAYS

NSSDC ID 63-046A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- F.B. McDONALD, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 05/26/64

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF TWO DETECTOR SYSTEMS. THE FIRST WAS A DE/DX VS E TELESCOPE WITH THIN AND THICK CSI SCINTILLATORS (ONE EACH) AND AN

ANTICOINCIDENCE PLASTIC SCINTILLATION COUNTER. THE TELESCOPE AXIS WAS NORMAL TO THE SPACECRAFT SPIN AXIS. COUNTS OF PARTICLES PENETRATING THE THIN CSI SCINTILLATOR AND STOPPING IN THE THICK CSI SCINTILLATOR WERE ACCUMULATED DURING ONE 39.36-SEC INTERVAL EVERY 5.46 MIN. THE RELATIVE CONTRIBUTION TO THE COUNT RATE OF VARIOUS SPECIES (ELECTRONS BETWEEN 3 AND 12 MEV, IONS WITH CHARGE = 1, 2, ATOMIC MASS = 1, 2, 3, 4, AND ENERGY BETWEEN 18.7 AND 11.6 MEV/NUCLEON) AND ENERGY SPECTRAL INFORMATION WERE DETERMINED BY 512-CHANNEL PULSE HEIGHT ANALYSIS PERFORMED SIMULTANEOUSLY ON THE OUTPUT OF BOTH CSI SCINTILLATORS SIX TIMES EVERY 5.46 MIN. THE SECOND DETECTOR SYSTEM CONSISTED OF TWO GEIGER-MUELLER (GM) TUBE TELESCOPES ORIENTED PARALLEL TO AND PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. EACH TELESCOPE CONSISTED OF TWO COLLINEAR GM TUBES. THE PARALLEL AND PERPENDICULAR TELESCOPES MEASURED THE SUM OF COUNTS DUE TO PROTONS ABOVE 70 MEV AND ELECTRONS ABOVE 6.5 MEV AND THE SUM OF COUNTS DUE TO PROTONS ABOVE 65 MEV AND ELECTRONS ABOVE 6 MEV, RESPECTIVELY. COUNTS REGISTERED IN ANY ONE OF THE FOUR GM TUBES WERE ALSO ACCUMULATED. THESE OMNIDIRECTIONAL COUNTS WERE DUE TO PROTONS ABOVE 50 MEV PLUS ELECTRONS ABOVE 4 MEV. THE PARALLEL, PERPENDICULAR, AND OMNIDIRECTIONAL COUNT RATES WERE OBTAINED FOR ONE 40-SEC ACCUMULATION INTERVAL DURING SUCCESSIVE NORMAL 81.9-SEC TELEMETRY SEQUENCES. THUS, ANY ONE COUNT RATE WAS MEASURED FOR 40 SEC ONCE EACH 5.46 MIN. BOTH DETECTOR SYSTEMS WORKED WELL FROM LAUNCH UNTIL MAY 26, 1964.

DATA SET NAME- HOURLY AVERAGED COUNT RATES ON TAPE

NSSDC ID 63-046A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 05/26/64

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BINARY MAGNETIC TAPE GENERATED BY THE EXPERIMENTER ON AN IBM 7040/7094 DIRECT COUPLED SYSTEM. EACH LOGICAL RECORD CONTAINS DATA FROM 1 DAY IN 652 WORDS (CONTROL WORDS NOT INCLUDED). HOURLY AVERAGED COUNT RATES FOR THE SCINTILLATOR TELESCOPE AND FOR THE TWO GM TELESCOPES (DIRECTIONAL AND OMNIDIRECTIONAL MODES) ARE GIVEN.

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID 63-046A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- K.A. ANDERSON, U OF CALIFORNIA, BERK, BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 03/26/65

#### EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT, DESIGNED TO MEASURE FLUXES OF GEOMAGNETICALLY TRAPPED PARTICLES, CONSISTED OF A 7.6-CM-DIAMETER

NEFER-TYPE IONIZATION CHAMBER AND TWO ANTON 223 GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1 AND 17 MEV, RESPECTIVELY. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS GREATER THAN 45 KEV SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A 61-DEG FULL ANGLE, AND ITS AXIS OF SYMMETRY MADE AN ANGLE OF 59.5 DEG WITH THE SPACECRAFT SPIN AXIS. GM TUBE A RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. GM TUBE B HAD NO DIRECT ACCESS TO THE SPACE ENVIRONMENT AND RESPONDED OMNIDIRECTIONALLY TO BACKGROUND ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER WERE ACCUMULATED FOR 326.08 SEC AND READ OUT ONCE EVERY 327.68 SEC. COUNTS FROM GM TUBE A WERE ACCUMULATED FOR 39.36 SEC AND READ OUT SIX TIMES EVERY 327.68 SEC. COUNTS FROM GM TUBE B WERE ACCUMULATED FOR 39.36 SEC AND READ OUT FIVE TIMES EVERY 327.68 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH MAY 10, 1965.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES ON TAPE NSSDC ID 63-046A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/28/63 TO 03/26/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO 7-TRACK, BCD, 800-BPI TAPES THAT WERE SUBMITTED BY THE EXPERIMENTER. THE FIRST FILE ON EACH TAPE IS A 12-CHARACTER INDEX THAT IDENTIFIES THE ORIGINAL GSFC TAPE FROM WHICH THE DATA WERE TAKEN. FOLLOWING EACH INDEX ARE A VARIABLE NUMBER OF 1032-CHARACTER DATA RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS AND A 24-CHARACTER GROUP THAT AGAIN IDENTIFIES THE DATA WITH RESPECT TO THE ORIGINAL GSFC TAPE. EACH LOGICAL RECORD CONTAINS THE UT (DAY, HR, MIN, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL AND POLAR SOLAR ANGLES, THE SATELLITE SPIN PERIOD, AND SEVERAL PROCESSING ERROR FLAGS. THESE DATA ARE NOT TIME ORDERED. A TIME-ORDERED VERSION OF THESE DATA IS FOUND IN DATA SET 63-046A-05B.

DATA SET NAME- TIME-ORDERED COUNT RATES ON TAPE NSSDC ID 63-046A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/28/63 TO 03/26/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, BCD, 556-BPI TAPE WHICH WAS GENERATED AT NSSDC BY TIME ORDERING DATA SET 63-046A-05A. THE FIRST FILE ON THE TAPE IS A 12-CHARACTER INDEX THAT IDENTIFIES THE ORIGINAL GSFC TAPE FROM WHICH THE DATA WERE TAKEN. FOLLOWING THE INDEX ARE A VARIABLE NUMBER



OF 1032-CHARACTER DATA RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS AND A 24-CHARACTER GROUP THAT AGAIN IDENTIFIES THE DATA WITH RESPECT TO THE ORIGINAL GSFC TAPE. EACH LOGICAL RECORD CONTAINS THE UT (DAY, HR, MIN, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL AND POLAR SOLAR ANGLES, THE SATELLITE SPIN PERIOD, AND SEVERAL PROCESSING ERROR FLAGS.

DATA SET NAME- PLOTS OF COUNT RATES VS TIME ON  
MICROFILM

NSSDC ID 63-046A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 12/28/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM WHICH WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100 AND THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. THESE DATA ARE TIME ORDERED, WITH NO EPHEMERIS INFORMATION, AND COVER APPROXIMATELY 40 PERCENT OF THE PERIOD FROM NOVEMBER 27, 1963, TO DECEMBER 28, 1964.

DATA SET NAME- PLOTS OF EXPANDED COUNT RATES VS TIME ON  
MICROFILM

NSSDC ID 63-046A-05D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 02/28/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM WHICH WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100, THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY, AND THE RATIO OF THE COUNT RATES OF GM TUBE A TO GM TUBE B TIMES 0.1. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. EACH FRAME CONTAINS APPROXIMATELY 4 HR OF DATA. THESE DATA ARE TIME ORDERED, WITH NO EPHEMERIS INFORMATION, AND COVER APPROXIMATELY 40 PERCENT OF THE PERIOD FROM NOVEMBER 27, 1963, TO FEBRUARY 28, 1964. ALSO PRESENTED ARE 1.25-HR AVERAGES OF THE COUNT RATE OF GM TUBE A VS TIME. THESE DATA ARE ALSO TIME ORDERED, WITH NO EPHEMERIS INFORMATION, AND COVER APPROXIMATELY 90 PERCENT OF THE PERIOD FROM NOVEMBER 27, 1963, TO FEBRUARY 28, 1964.

DATA SET NAME- MERGED L-ORDERED COUNT RATES ON TAPE

NSSDC ID 63-046A-05E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 12/28/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BCD TAPE THAT WAS GENERATED AT NSSDC ON AN IBM 7094 COMPUTER. THE DATA ON THIS TAPE ARE AN L-VALUE SORTED VERSION OF THE GM TUBE A DATA FOUND IN DATA SET 63-046A-05C, MERGED WITH EPHEMERIS INFORMATION. DATA ARE PRESENTED FOR THE FOLLOWING L VALUES -- 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, 11.0, AND 12.0. DATA ARE PRESENTED IN ONE FILE CONSISTING OF 84-CHARACTER LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS THE COUNT RATE (CORRECTED FOR DETECTOR DEAD TIME), THE RATIO OF THE MAGNETIC FIELD STRENGTH TO THE EQUATORIAL MAGNETIC FIELD STRENGTH (FOR THE SAME L VALUE), LOCAL TIME, UT, MONTH, DAY, YEAR, GEOMAGNETIC LATITUDE, GEOGRAPHIC LATITUDE AND LONGITUDE, AND L VALUE.

EXPERIMENT NAME- SOLAR WIND PROTONS

NSSDC ID 63-046A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

INVESTIGATORS- J.H. WOLFE, NASA-ARC , MOFFETT FIELD, CALIF.  
R.W. SILVA, NASA-ARC , MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- 04/03/64

EXPERIMENT BRIEF DESCRIPTION

A QUADRISPHERICAL ELECTROSTATIC ANALYZER WITH A CURRENT COLLECTOR AND AN ELECTROMETER AMPLIFIER WAS USED TO DETECT AND ANALYZE THE POSITIVE ION COMPONENT OF THE INCIDENT PLASMA AND TO STUDY ITS GROSS FLOW CHARACTERISTICS. PROTONS WERE ANALYZED IN 14 ENERGY CHANNELS BETWEEN 0.025 AND 16 KEV. THE INSTRUMENT WAS MOUNTED ON THE SATELLITE EQUATORIAL PLANE AND HAD A VIEW ANGLE OF 15 DEG IN THIS PLANE AND OF 90 DEG IN THE PLANE CONTAINING THE SPIN AXIS. THE SATELLITE'S EQUATORIAL PLANE WAS DIVIDED INTO THREE CONTIGUOUS SECTORS (111.8 DEG, 111.8 DEG, AND 136.4 DEG) BY USE OF AN OPTICAL ASPECT SENSOR. THE PEAK FLUX IN ONE SECTOR WAS RECORDED AT ONE ANALYZER PLATE POTENTIAL PER REVOLUTION OF THE SATELLITE. (NO INFORMATION AS TO THE POSITION WITHIN THE SECTOR IN WHICH THE PEAK FLUX OCCURRED WAS RETAINED.) AFTER 14 REVOLUTIONS, ALL ENERGY CHANNELS HAD BEEN SCANNED, AND THE PROCESS WAS REPEATED FOR THE NEXT SECTOR. A COMPLETE SCAN IN ENERGY AND SECTOR WAS REPEATED EVERY 5.46 MIN. NO DATA WERE OBTAINED FOR THE BRIEF PERIODS WHEN THE SATELLITE WAS IN THE MAGNETOSPHERE. THE INSTRUMENT OPERATED WELL UNTIL APRIL 1964 WHEN IT STARTED OPERATING INTERMITTENTLY. ITS OPERATION CONTINUED TO DEGRADE THEREAFTER.

DATA SET NAME- PLOTS OF FLUX VS TIME AND RADIAL  
DISTANCE ON MICROFILM

NSSDC ID 63-046A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 04/03/64

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA PLOTS WERE SUPPLIED BY THE EXPERIMENTER AND MICROFILMED BY NSSDC. ON EACH PLOT, ION FLUX (CONVERTED TO NORMAL INCIDENCE FLUX) IS PRESENTED VS TIME AND RADIAL DISTANCE FOR EACH OF THE THREE SECTORS OF THE SATELLITE'S EQUATORIAL PLANE. FOR EACH TIME PERIOD, THERE IS ONE PLOT FOR EACH OF THE FOLLOWING ENERGY LEVELS -- 600, 1700, 2970, AND 3700 EV. A SINGLE PLOT CONTINUED FOR 2 DAYS (ONE HALF OF AN ORBIT). THE DATA ARE AVAILABLE ON ONE REEL OF 16-MM MICROFILM AND COVER THE TIME PERIODS NOVEMBER 27, 1963, TO MARCH 22, 1964, AND MARCH 31 TO APRIL 3, 1964. THESE CORRESPOND TO ORBITS 1 THROUGH 30 PLUS ORBIT 33. THERE IS A 90 PERCENT COVERAGE FOR THE FIRST TIME PERIOD AND A 5 PERCENT COVERAGE FOR THE SECOND TIME PERIOD.

EXPERIMENT NAME- FARADAY CUP

NSSDC ID 63-046A-07

ORIGINAL EXPERIMENT INSTITUTION- MIT

INVESTIGATORS- H.S. BRIDGE, MIT, CAMBRIDGE, MASS.

DATE LAST USEFUL DATA RECORDED- 01/13/65

#### EXPERIMENT BRIEF DESCRIPTION

A FIVE-ELEMENT SPLIT COLLECTOR FARADAY CUP WAS USED TO MEASURE SOLAR WIND PARTICLES IN THE FOLLOWING SEQUENCE -- POSITIVE IONS FROM 45 TO 105 EV, POSITIVE IONS FROM 55 TO 235 EV, POSITIVE IONS FROM 220 TO 640 EV, POSITIVE IONS FROM 560 TO 1800 EV, ELECTRONS FROM 65 TO 210 EV, AND POSITIVE IONS FROM 1700 TO 5400 EV. (THE SPLIT PLANE OF THE COLLECTOR WAS IN THE SPIN EQUATORIAL PLANE OF THE SPACECRAFT.) MEASUREMENTS CONSISTED OF 22 INSTANTANEOUS CURRENT SAMPLES, EACH SEPARATED BY 0.16 SEC (SPANNING MORE THAN ONE SATELLITE ROTATION). THESE MEASUREMENTS REPRESENTED THE SUM OF THE CURRENT TO THE SPLIT COLLECTOR, THE MAXIMUM DIFFERENCE IN CURRENT ENCOUNTERED DURING SPACECRAFT ROTATION, AND WHICH HALF OF THE COLLECTOR WAS MAXIMUM. THE ENTIRE SEQUENCE REQUIRED 2.8 MIN AND WAS REPEATED EVERY 5.5 MIN. THE ENTRANCE CONE FOR THIS FARADAY CUP HAD A HALF-ANGLE OF ABOUT 80 DEG. INTERFERENCE WAS ENCOUNTERED FROM REFRACTED PARTICLES (WITH THE MOST PRONOUNCED EFFECT AT ABOUT 70 DEG INCIDENCE TO CUP NORMAL), FROM SECONDARY ELECTRONS, AND FROM ULTRAVIOLET RADIATION. USEFUL DATA WERE OBTAINED FROM LAUNCH UNTIL JANUARY 13, 1965. HOWEVER, THERE WAS POOR DATA COVERAGE DURING THE LAST 4 MONTHS BECAUSE OF INTERMITTENT SATELLITE TRANSMISSION.

DATA SET NAME- THREE-HR AVERAGED PLASMA PARAMETERS ON  
MAGNETIC TAPE

NSSDC ID 63-046A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 02/22/64

#### DATA SET BRIEF DESCRIPTION

THESE DATA WERE DERIVED FROM THE IRREGULAR INTERVAL PLASMA PARAMETERS (DATA

SET 63-046A-07B). THE DATA SET CONTAINS 3-HR AVERAGES OF THE PLASMA CONVECTED VELOCITY, PROTON DENSITY, PLASMA ENERGY DENSITY (NOT THERMAL ENERGY DENSITY), AND PLASMA FLUX. ONE TO EIGHT AVERAGES ARE GIVEN PER DAY, AND, FOR CONVENIENCE, KP IS ALSO GIVEN. THE DATA ARE ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE WITH 84 CHARACTERS PER LOGICAL RECORD AND ONE LOGICAL RECORD PER PHYSICAL RECORD.

DATA SET NAME- PLASMA PARAMETERS FOR IRREGULAR TIME  
INTERVALS ON MAGNETIC TAPE

NSSDC ID 63-046A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 12/15/64

DATA SET BRIEF DESCRIPTION

THE DATA IN THIS DATA SET WERE DERIVED THROUGH ANALYSIS OF THE SUPERIMPOSED CUP CURRENT PLOTS (DATA SET 63-046A-07C). INCLUDED IN THIS ANALYSIS WERE CORRECTIONS FOR ABERRATION (WHICH WERE CONSISTENTLY SELF VERIFIED USING WIDELY SPACED EPOCHS). BASED ON THE CORRECTED DATA, VALUES FOR BULK VELOCITY AND MOST PROBABLE THERMAL SPEED WERE DETERMINED. A CONVECTED MAXWELLIAN DISTRIBUTION WAS FIT TO THE SIX RANGES OF ENERGY-WINDOW DATA. A PROTON PLASMA DENSITY WAS THEN DETERMINED. THESE PLASMA PARAMETER DATA ARE PRESENTED FOR IRREGULAR TIME INTERVALS (WHILE THE SPACECRAFT WAS IN INTERPLANETARY SPACE) ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE. THERE ARE 84 CHARACTERS PER LOGICAL RECORD AND ONE LOGICAL RECORD PER PHYSICAL RECORD. THE DATA ON THE TAPE INCLUDE (1) CONVECTED VELOCITY AND UNCERTAINTY IN VELOCITY, (2) MOST PROBABLE THERMAL SPEED, IN UPPER AND LOWER LIMITS, (3) PROTON PLASMA DENSITY, AND (4) PLASMA TEMPERATURE ASSUMING AN ISOTROPIC MAXWELLIAN DISTRIBUTION, GIVEN AS FUNCTIONS OF TIME.

DATA SET NAME- SUPERIMPOSED CUP CURRENTS PLOTTED VS  
DETECTOR LOOK DIRECTION ON MICROFILM

NSSDC ID 63-046A-07C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 12/28/64

DATA SET BRIEF DESCRIPTION

FOR EACH SPECTRAL ENERGY LEVEL, DETECTOR CUP COLLECTOR CURRENTS ARE PLOTTED VS DETECTOR LOOK DIRECTION USING THE SUN-SPACECRAFT SPIN AXIS PLANE AS REFERENCE. DATA FROM SUCCESSIVE SPECTRA ARE SUPERIMPOSED. FOR A QUIET STEADY PLASMA, THESE DATA INDICATE THE AVERAGE NATURE OF THE SOLAR WIND. THE TIME PERIOD COVERED BY EACH PLOT, WHICH IS EQUIVALENT TO THE NUMBER OF SPECTRA SUPERIMPOSED, IS VARIABLE. THIS TIME PERIOD HAS BEEN DETERMINED BY THE EXPERIMENTER AND ROUGHLY INDICATES THE INTERVAL OVER WHICH THE PLASMA MAY BE CONSIDERED STEADY STATE. THE DATA ARE ON TWO REELS OF 16-MM MICROFILM WITH ABOUT 70 PERCENT COVERAGE FROM NOVEMBER 27, 1963, TO MAY 7, 1964, AND ABOUT 60 PERCENT COVERAGE FROM SEPTEMBER 17, 1964, TO DECEMBER 28, 1964.

DATA SET NAME- REDUCED PLASMA MEASUREMENTS ON MAGNETIC  
TAPE

NSSDC ID 63-046A-07D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/27/63 TO 01/13/65

DATA SET BRIEF DESCRIPTION

ALL AVAILABLE MEASUREMENTS MADE BY THE MIT EXPERIMENT HAVE BEEN CONVERTED BY THE EXPERIMENTER TO WHAT CAN BEST BE DESCRIBED AS 'ENGINEERING' UNITS. THIS PROCESS HAS TAKEN INTO ACCOUNT THE INSTRUMENT'S NONLINEAR TEMPERATURE-DEPENDENT TRANSFER FUNCTION, AND THE DATA HAVE BEEN CONVERTED TO FLUXES OF CHARGED PARTICLES IN TERMS OF MEASURED CURRENT (IN AMPS) WITHIN A SPECIFIED ENERGY WINDOW. THE SAMPLES IN EACH ENERGY WINDOW ARE PRESENTED IN THE SEQUENCE TAKEN, AS FUNCTIONS OF TIME. THE DATA ARE ON FIVE 800-BPI, 7-TRACK, FORTRAN IV MAGNETIC TAPES PRODUCED ON AN IBM 360 IN BCD MODE.

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SPACECRAFT NAME- SOLRAD 7A

NSSDC ID 64-001D

OTHER NAMES- 1964-001D, GREB 5

LAUNCH DATE- 01/11/64

DATE LAST SCIENTIFIC DATA RECORDED- 02/06/65

AGENCY- US NAVY

SPACECRAFT WEIGHT IN ORBIT- 45.4 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 01/16/64 ORBIT PERIOD- 103.5 MIN.

APOGEE- 934. KM ALT

PERIGEE- 905. KM ALT INCLINATION- 69.90 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THIS SATELLITE WAS A SPIN-STABILIZED SPHERE CONTAINING FIVE X-RAY PHOTOMETERS, FOUR UV PHOTOMETERS, AND TWO SYSTEMS TO ACCURATELY DETERMINE THE SOLAR ASPECT ANGLE. IT WAS PLACED INTO A NEARLY CIRCULAR ORBIT BY AN AGENA D LAUNCH VEHICLE. ITS PURPOSES WERE TO MONITOR THE SOFT COMPONENT OF SOLAR X RAYS (2 TO 60 A) AND THE LOW-FREQUENCY PORTION OF THE SOLAR HYDROGEN LYMAN-ALPHA EMISSION SPECTRUM (1225 TO 1350 A) AND TO TRANSMIT THIS QUANTITATIVE ANALOG DATA BACK TO EARTH IN REAL TIME. THE SATELLITE TRANSMITTED DATA CONTINUOUSLY UNTIL SEPTEMBER 1964 FROM ALL BUT THE 44- TO 55-A AND 8- TO 16-A DETECTORS, BOTH OF WHICH FAILED SOON AFTER LAUNCH. SPORADIC DATA WERE RECEIVED UNTIL FEBRUARY 1965.

EXPERIMENT NAME- SOLAR X-RAY (2 TO 60 A) AND UV (1225  
TO 1350 A) FLUX

NSSDC ID 64-001D-01

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

INVESTIGATORS- R.W. KREPLIN, NAVAL RESEARCH LAB , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 02/06/65

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO PROVIDE REAL-TIME ANALOG DATA CONSISTING OF QUANTITATIVE MEASUREMENTS OF THE SOLAR X-RAY FLUX FROM 2 TO 60 Å. THIS WAVELENGTH INTERVAL WAS MONITORED BY FIVE GAS-FILLED (ARGON OR NITROGEN) ION CHAMBER PHOTOMETERS (2 TO 8 Å, 8 TO 14 Å, 8 TO 16 Å, 44 TO 55 Å, AND 44 TO 60 Å) MAGNETICALLY PROTECTED TO REDUCE THEIR RESPONSE TO THE CHARGED PARTICLES OF THE VAN ALLEN BELT. THE COMPOSITION OF THE DETECTOR WINDOWS WAS EITHER BERYLLIUM, ALUMINUM, OR MYLAR. THE WAVELENGTH SENSITIVITY OF THE DETECTOR WAS DETERMINED BY THE WINDOW MATERIAL AND THICKNESS AND THE GAS FILLING. A SIXTH DETECTOR COMPOSED OF FOUR UV PHOTOMETERS CONNECTED IN PARALLEL MONITORED SOLAR PHOTOSPHERIC EMISSION IN THE 1225- TO 1350-Å BAND (HYDROGEN LYMAN-ALPHA). ALL FOUR UV PHOTOMETERS HAD 2-MM-THICK CALCIUM FLUORIDE WINDOWS BUT CONTAINED NO GAS FILLER. THEY REQUIRED NO MAGNETIC PROTECTION. EACH OF 24 STATIONS RECEIVED ABOUT FOUR SATELLITE PASSES PER DAY AND OBTAINED 5 TO 15 MIN OF GOOD DATA ON EACH PASS. USEFUL DATA WERE RECEIVED FROM JANUARY 11, 1964, TO FEBRUARY 6, 1965. SPORADIC DATA WERE OBTAINED FROM FEBRUARY 1965 UNTIL JULY 1966 BUT WERE OF LIMITED VALUE DUE TO SPACECRAFT WOBBLE.

DATA SET NAME- MACHINE REDUCED X-RAY FLUX DATA (THREE POINTS PER PASS) ON MAGNETIC TAPE NSSDC ID 64-001D-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 01/12/64 TO 02/31/64

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA ARE ON ONE REEL OF BCD MAGNETIC TAPE. AFTER THE ION CHAMBER PHOTOMETER CURRENT READINGS WERE CONVERTED TO FLUX VALUES, THE ORIGINAL TIME-ORDERED DATA WERE MACHINE REDUCED ON AN IBM 1620 USING THREE POINTS PER PASS ON A PEAK FLUX SEARCH IN CERTAIN WAVELENGTH BANDS. THE OUTPUT FROM THE MACHINE REDUCTION WAS PUNCHED ON IBM CARDS AND THEN TRANSFERRED ONTO MAGNETIC TAPE AT NSSDC. THERE ARE THREE CARD IMAGES PER PASS. THE FIRST CARD IS A HEADER CARD, THE SECOND IS BLANK, AND THE THIRD CONTAINS THE DATE, START AND STOP TIME OF THE PASS (UT), ORBIT NUMBER, STATION IDENTIFIER, ASPECT ANGLE, 8- TO 14-Å FLUX, AND 44- TO 60-Å FLUX. THE DATA, WHICH ARE OF GOOD QUALITY, COVER A CONTINUOUS PERIOD FROM JANUARY 12, 1964, TO AUGUST 31, 1964.

DATA SET NAME- SOLAR X-RAY (2 TO 60 Å) AND UV FLUX (1225 TO 1350 Å) DATA ON TAPE NSSDC ID 64-001D-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/11/64 TO 02/03/65

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA ARE ON ONE REEL OF BCD MAGNETIC TAPE. AFTER THE

PHOTOMETER CURRENT READINGS WERE CONVERTED TO FLUX VALUES. THE ORIGINAL TIME-ORDERED DATA WERE HAND REDUCED USING ONE POINT PER PASS ON A PEAK FLUX SEARCH IN FIVE WAVELENGTH BANDS. THE DATA RESULTING FROM THE HAND REDUCTION WERE FED INTO AN IBM 1620 SYSTEM THAT PRODUCED AN OUTPUT ON IBM CARDS. THESE DATA WERE LATER TRANSFERRED ONTO MAGNETIC TAPE AT NSSDC. THERE ARE FROM ONE TO FIVE CARD IMAGES FOR EACH PASS. THE FIRST CARD OF EACH GROUP CONTAINS THE DATE, START AND STOP TIME OF THE PASS (UT), PASS NUMBER, AND SOME REFERENCES TO SOLAR ASPECT SENSORS AND UV DETECTORS. THE SECOND CARD GIVES THE ASPECT ANGLE (DEG) AND THE UV DETECTOR CURRENT. THE REMAINING CARDS CONTAIN THE CURRENTS FROM THE X-RAY DETECTORS (2 TO 8 A, 8 TO 14 A, 8 TO 16 A, 44 TO 55 A, AND 44 TO 60 A) AND THE CORRESPONDING FLUXES COMPUTED FROM THEM. THE DATA, WHICH ARE OF GOOD QUALITY, COVER A CONTINUOUS PERIOD FROM JANUARY 11, 1964, TO AUGUST 31, 1964, EXCEPT FOR THE 44- TO 55-A AND 8- TO 16-A DETECTORS, WHICH FAILED SOON AFTER LAUNCH. SPCRADIC DATA WERE OBTAINED FROM SEPTEMBER 1964 UNTIL FEBRUARY 1965, WITH THE COVERAGE FOR EACH DETECTOR VARYING SOMEWHAT.

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SPACECRAFT NAME- RELAY 2  
OTHER NAMES- 1564-003A, A 16

NSSDC ID 64-003A

LAUNCH DATE- 01/21/64 DATE LAST SCIENTIFIC DATA RECORDED- 08/31/68

AGENCY- NASA-GSFC SPACECRAFT WEIGHT IN ORBIT- 78 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 01/22/64 ORBIT PERIOD- 194.7 MIN.  
APOGEE- 7411. KM ALT PERIGEE- 2091. KM ALT INCLINATION- 46.316 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

RELAY 2, ALTHOUGH PRINCIPALLY A COMMUNICATIONS SATELLITE, CARRIED PARTICLE EXPERIMENTS DESIGNED TO MAP THE TRAPPED RADIATION BELT. THE SPIN AXIS ORIENTATION HAD A RIGHT ASCENSION OF ABOUT 130 DEG AND AN INCLINATION OF ABOUT -60 DEG. ACCURATE SPIN AXIS ORIENTATION INFORMATION IS NOT AVAILABLE. THE INITIAL SPIN RATE WAS ABOUT 173 RPM. RELAY 2, PHYSICALLY SIMILAR TO RELAY 1, HAD ON BOARD TWO TRANSMITTERS, ONE OF WHICH WAS USED FOR PCM TELEMETRY (THE SEQUENCE REQUIRING ABOUT 1 SEC). DESIGN CHANGES IN THIS TRANSMITTER IMPROVED ITS PERFORMANCE TO THE POINT WHERE SATELLITE RESPONSE TO SPURIOUS COMMANDS WAS ESSENTIALLY ELIMINATED. ONE OF THE TWO ONBOARD TRANSPONDERS OPERATED NORMALLY UNTIL NOVEMBER 20, 1966. FROM THAT TIME UNTIL ITS FAILURE ON JANUARY 20, 1967, IT REQUIRED A LONGER TIME THAN NORMAL TO COME ON. THE OTHER TRANSPONDER CONTINUED TO OPERATE UNTIL JUNE 9, 1967, WHEN IT TOO FAILED TO OPERATE NORMALLY. SOME DATA WERE RECORDED THROUGH 1969. HOWEVER, AFTER AUGUST 31, 1968, THESE TAPES WERE NOT PROCESSED AND THE DATA WERE NOT ARCHIVED.

EXPERIMENT NAME- SOLID-STATE ION CHAMBER ELECTRON AND  
PROTON DETECTOR

NSSDC ID 64-003A-02

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

INVESTIGATORS- W.L. BROWN, BELL TELEPHONE LAB , MURRAY HILL, N.J.

DATE LAST USEFUL DATA RECORDED- 08/31/68

#### EXPERIMENT BRIEF DESCRIPTION

TWO SILICON PHOSPHOROUS-DIFFUSED DIODES WERE USED AS SMALL SOLID-STATE IONIZATION CHAMBERS TO MAP THE EARTH'S RADIATION ENVIRONMENT. COUNTS WERE ACCUMULATED ONLY WHEN DETECTORS LOOKED WITHIN 10 DEG OF THE LOCAL MAGNETIC FIELD. THE DIODE USED TO DETECT PROTONS WAS MOUNTED BEHIND A 25-DEG HALF-ANGLE APERTURE COLLIMATOR WITH AN ENTRANCE APERTURE OF 2-MM DIAMETER. THE OUTER SHIELD WAS SUFFICIENTLY MASSIVE TO EXCLUDE PROTONS LESS THAN 80 MEV AND ELECTRONS LESS THAN 10 MEV. MAGNETS SURROUNDING THE DIODE EFFECTIVELY EXCLUDED ELECTRONS LESS THAN 300 KEV. THE DETECTOR RESPONDED TO PROTONS FROM 1.8 MEV TO 18 MEV AND DISCRIMINATED BETWEEN 1.97-, 3.60-, AND 5.00-MEV PROTONS. ALTHOUGH THE INSTRUMENT WAS DESIGNED TO OPERATE AT THREE DIFFERENT BIAS MODES (120, 20, AND 5 V), ONLY THE HIGHEST RETURNED USEFUL PROTON DATA. THE REMAINING TWO SERVED TO DETECT ELECTRON CONTAMINATION OF THE COUNTING RATE. THE ELECTRON DETECTOR, SIMILAR TO THE PROTON DETECTOR, HAD A COLLIMATOR WITH A HALF-ANGLE OF 10 DEG, APERTURE DIAMETER OF 2 MM, AND SUFFICIENT SHIELDING TO EXCLUDE PROTONS LESS THAN 60 MEV AND ELECTRONS LESS THAN 60 MEV. (NO MAGNETIC SHIELD WAS USED ON THE ELECTRON DETECTOR.) THE DETECTION SCHEME EMPLOYED PULSE HEIGHT ANALYSES TO DISCRIMINATE BETWEEN 0.223- TO 0.403-, 0.403- TO 0.580-, 0.580- TO 0.775-, AND 0.775- TO 1.120-MEV ELECTRONS. THE BASIC MEASUREMENT SEQUENCE REQUIRED 12 SEC. COUNTS FROM EACH DETECTOR WERE ACCUMULATED FOR 10 SEC. SAMPLES WERE TELEMETERED EVERY SECOND DURING THE ACCUMULATION TIME. THE REGISTERS WERE FROZEN, AND ONE REDUNDANT READING (THE 10TH) WAS TELEMETERED. FOR PROTONS, THIS PROCEDURE WAS CARRIED OUT THREE TIMES FOR EACH BIAS MODE, INTERSPACED BY A 12-SEC ALLOWANCE FOR BIAS CHANGE. THE ENTIRE SEQUENCE OF THREE MODES REQUIRED 144 SEC. FOR ELECTRONS, THE SEQUENCE WAS REPEATED EVERY 12 SEC. THE DETECTORS RETURNED DATA THROUGHOUT THE SPACECRAFT'S USEFUL LIFETIME. HOWEVER, DATA ACQUIRED AFTER AUGUST 31, 1968, WERE NOT PROCESSED, AND ANY STORED DATA REMAINING WERE NOT RETAINED.

DATA SET NAME- REDUCED L-ORDERED ELECTRON AND PROTON  
DATA ON MAGNETIC TAPE

NSSDC ID 64-003A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/21/64 TO 12/31/65

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, GENERATED AT BELL TELEPHONE LABORATORIES FROM ORIGINAL DATA, ARE CONTAINED ON TWO ELECTRON L TAPES AND FOUR PROTON L TAPES. THE 7-TRACK TAPES, WHICH WERE RECORDED AT 800 BPI ON THE IEM 7094 BESYS, HAVE A 167-WORD BLOCK SIZE. EACH WORD CONTAINS 36 BITS. EACH RECORD ON THE TAPES IS HEADED WITH THE MAXIMUM AND MINIMUM L VALUES FOR THE FILE AND THE TIME PERIODS INCLUDED IN THE FILE. THE REST OF THE FILE CONTAINS THE MCILWAIN L PARAMETER, MAGNETIC FIELD, LOG B/BO, AND DETECTOR COUNTS IN UNITS OF COUNTS PER SECOND IN EACH DISCRIMINATION STATE FOR THE ELECTRON TAPES AND IN UNITS OF COUNTS PER SECOND FOR EACH BIAS MODE FOR THE PROTON TAPES. THERE ARE 62 FILES, DIVIDING DATA INTO L INTERVALS FROM 1 TO 7.



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SPACECRAFT NAME- ERS 13 NSSDC ID 64-040C  
OTHER NAMES- 1564-040C, TRS 6, TRS MARK II, FLIGHT  
NO. 2

LAUNCH DATE- 07/17/64 DATE LAST SCIENTIFIC DATA RECORDED- 12/08/64

AGENCY- ARPA-USAF SPACECRAFT WEIGHT IN ORBIT- 2 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 07/17/64 ORBIT PERIOD- 2352 MIN.  
APOGEE-104400. KM ALT PERIGEE- 230. KM ALT INCLINATION- 36.9 DEGREES

SPACECRAFT BRIEF DESCRIPTION

ERS 13 WAS A SPIN-STABILIZED TETRAHEDRON THAT WEIGHED 2 KG AND MEASURED 22.86 CM ALONG EACH TRIANGULAR EDGE. THE SPIN RATE WAS APPROXIMATELY 10 RPM, AND POWER WAS OBTAINED BY SOLAR CELLS. THE SATELLITE CARRIED A SCINTILLATION COUNTER AND A SOLID-STATE DETECTOR TO MEASURE ELECTRONS AND PROTONS IN THE RADIATION BELTS. THE ORBIT OF THE SATELLITE WAS HIGHLY ECCENTRIC WITH A 230-KM PERIGEE AND 104,400-KM APOGEE ALTITUDE. BECAUSE OF THE LOW (100 MW) TRANSMITTER POWER AT 136 MHZ, NO DATA WERE OBTAINED BEYOND 6 EARTH RADII. THE TRANSMISSION WAS NORMAL FROM LAUNCH UNTIL OCTOBER 20, 1964, WHEN THE TRANSMITTER BECAME INTERMITTENT. FROM THIS TIME UNTIL JANUARY 4, 1965, SOME TRANSMISSIONS WERE RECEIVED. A PAM/FM/PM TELEMETRY SYSTEM USING IRIG CHANNEL 5 WAS EMPLOYED.

EXPERIMENT NAME- CHARGED PARTICLE DETECTORS NSSDC ID 64-040C-01

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CORP

INVESTIGATORS- J.I. VETTE, NASA-GSFC, GREENBELT, MD.  
J.B. GARDNER, TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.

DATE LAST USEFUL DATA RECORDED- 12/08/64

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT CONSISTED OF (1) A LITHIUM DRIFTED SILICON DETECTOR TO MEASURE SEPARATELY ELECTRONS ABOVE 700 KEV AND PROTONS BETWEEN 12 AND 23 MEV AND (2) A PLASTIC SCINTILLATION COUNTER TO MEASURE SEPARATELY ELECTRONS ABOVE 3.5 MEV AND PROTONS BETWEEN 39 AND 50 MEV IN THE RADIATION BELTS. THE PHOTOMULTIPLIER TUBE USED WITH THE SCINTILLATION COUNTER SHOWED A CHANGE IN GAIN AROUND SEPTEMBER 27, 1964. BOTH DETECTOR SYSTEMS WERE OMNIDIRECTIONAL AND USED LOGARITHMIC COUNT RATE METERS TO CONVERT RATES INTO ANALOG SIGNALS. TWO PULSE HEIGHT DISCRIMINATORS WERE USED WITH EACH DETECTOR TO PROVIDE THE FOUR MEASUREMENTS.

DATA SET NAME- ORIGINAL CORRECTED COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 64-040C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/17/64 TO 12/08/64

DATA SET BRIEF DESCRIPTION

THE COUNT RATES FROM THE FOUR DISCRIMINATORS WERE SCALED FROM ANALOG STRIP CHARTS. EACH RATE CHANNEL WAS SAMPLED FOR APPROXIMATELY 10 SEC IN SEQUENCE. A SINGLE RATE AVERAGED OVER THIS SAMPLE PERIOD WAS DETERMINED. BOTH TEMPERATURE AND VOLTAGE CORRECTIONS WERE MADE BEFORE THE SUBCARRIER OSCILLATOR FREQUENCY WAS CONVERTED TO A COUNT RATE. APPROXIMATELY 20,000 DATA POINTS FROM OVER 400 HR OF DATA WERE OBTAINED AND PUT ON PUNCHED CARDS. BESIDES THE COUNT RATES, THE TIME OF YEAR (DECIMAL DAYS), LONGITUDE (DEG), RADIAL DISTANCE (KM), GEOMAGNETIC EQUATORIAL RADIUS (EARTH RADII), GEOMAGNETIC LATITUDE (DEG), L SHELL (EARTH RADII), B/BC, AND THE CARD NUMBER APPEAR. THE DATA SET CONSISTS OF A SINGLE 7-TRACK, 556-BPI, CDC 3600, BINARY MAGNETIC TAPE CONTAINING THESE CARD IMAGES.

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SPACECRAFT NAME- RANGER 7  
OTHER NAMES- 1564-041A, RA-B

NSSDC ID 64-041A

LAUNCH DATE- 07/28/64 DATE LAST SCIENTIFIC DATA RECORDED- 07/31/64

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT- 806 KG

ORBIT TYPE-	EPOCH-	/	/	ORBIT PERIOD-	MIN.
APOGEE- KM ALT	PERIGEE-		KM ALT	INCLINATION-	DEGREES

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS DESIGNED TO ACHIEVE A LUNAR IMPACT TRAJECTORY AND TO TRANSMIT HIGH-RESOLUTION PHOTOGRAPHS OF THE LUNAR SURFACE DURING THE FINAL MINUTES OF FLIGHT. THE SPACECRAFT CARRIED SIX TELEVISION CAMERAS, AN OPTICAL EARTH SENSOR AND HIGH-GAIN ANTENNA FOR OPTIMUM COMMUNICATIONS, AND SOLAR PANELS TO PROVIDE POWER (AS WELL AS ADDITIONAL ENGINEERING EQUIPMENT). THE TELECOMMUNICATIONS EQUIPMENT CONVERTED THE COMPOSITE VIDEO SIGNAL FROM THE CAMERA TRANSMITTERS INTO AN RF SIGNAL FOR SUBSEQUENT TRANSMISSION THROUGH THE SPACECRAFT HIGH-GAIN ANTENNA. SUFFICIENT VIDEO BANDWIDTH WAS PROVIDED TO ALLOW FOR RAPID FRAMING SEQUENCES OF BOTH NARROW- AND WIDE-ANGLE TELEVISION PICTURES. THE SPACECRAFT ENCOUNTERED THE LUNAR SURFACE IN DIRECT MOTION ALONG A HYPERBOLIC TRAJECTORY, WITH AN INCOMING ASYMPTOTIC DIRECTION AT AN ANGLE OF -5.57 DEG FROM THE LUNAR EQUATOR. THE ORBIT PLANE WAS INCLINED 26.84 DEG TO THE LUNAR EQUATOR. AFTER 68.6 HR OF FLIGHT, IMPACT OCCURRED IN A MARE AREA BETWEEN MARE NUBIUM AND OCEANUS PROCELLARUM (SUBSEQUENTLY NAMED MARE COGNITUM) AT 10.7 DEG S LATITUDE, 20.7 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES). VELOCITY AT IMPACT WAS 2.62

KM/SEC. THE SPACECRAFT PERFORMANCE WAS EXCELLENT. TRANSMISSION OF OVER 4300 PHOTOGRAPHS OCCURRED DURING THE FINAL 17 MIN OF FLIGHT, FROM 1308 UT TO 1325 UT ON JULY 31, 1964.

EXPERIMENT NAME- LUNAR TELEVISION

NSSDC ID 64-041A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- G.P. KUIPER, U OF ARIZONA, TUCSON, ARIZ.  
R.L. HEACOCK, NASA-JPL, PASADENA, CALIF.  
E.M. SHOEMAKER, CAL TECH, PASADENA, CALIF.  
H.C. UREY, U OF CALIFORNIA, SD, LA JOLLA, CALIF.  
E.A. WHITAKER, U OF ARIZONA, TUCSON, ARIZ.

DATE LAST USEFUL DATA RECORDED- 07/31/64

#### EXPERIMENT BRIEF DESCRIPTION

THE TELEVISION SYSTEM CONSISTED OF SIX SLOW-SCAN VIDICON TV CAMERAS CAPABLE OF TRANSMITTING HIGH-RESOLUTION CLOSEUP TELEVISION PICTURES OF THE LUNAR SURFACE DURING THE FINAL MINUTES OF FLIGHT BEFORE THE SPACECRAFT IMPACTED THE LUNAR SURFACE. THESE PHOTOGRAPHS PROVIDED SMALL-SCALE TOPOGRAPHIC INFORMATION NEEDED FOR THE SURVEYOR AND APOLLO PROJECTS. VIDICONS 2.54 CM IN DIAMETER WITH AN ANTIMONY-SULFIDE OXY-SULFIDE (ASOS) PHOTOCONDUCTOR TARGET WERE USED FOR IMAGE SENSING IN ALL SIX CAMERAS. THERE WERE TWO CAMERA CHANNELS WHICH HAD INDEPENDENT POWER DISTRIBUTION NETWORKS SO THAT THE GREATEST RELIABILITY AND PROBABILITY OF OBTAINING HIGHEST QUALITY VIDEO PICTURES WOULD BE AFFORDED. THE FIRST CHANNEL HAD TWO FULL-SCAN CAMERAS, ONE NARROW ANGLE (25-MM LENS) AND ONE WIDE ANGLE (76-MM LENS). THESE CAMERAS, DESIGNATED A-CAMERA AND B-CAMERA, UTILIZED AN ACTIVE IMAGE AREA OF 11 SQ MM THAT CONTAINED 1150 LINES AND WAS SCANNED IN 2.5 SEC. SCAN AND ERASE CYCLES WERE DESIGNED TO ACT ALTERNATELY, RESULTING IN INTERVALS OF 5 SEC BETWEEN CONSECUTIVE PICTURES ON A PARTICULAR CAMERA. THE OTHER CHANNEL HAD FOUR PARTIAL-SCAN (P) CAMERAS, TWO NARROW ANGLE AND TWO WIDE ANGLE. THE IMAGE AREA OF THESE FOUR CAMERAS WAS 2.8 SQ MM, CONTAINED 300 LINES, AND WAS SCANNED IN 0.2 SEC. THE INSTRUMENT ALLOWED FOR CAMERA FIELDS OF VIEW, RANGING FROM 25 DEG TO 2.1 DEG, TO OVERLAP AND PRODUCE A 'NESTING' SEQUENCE OF PICTURES. THE VIDEO TRANSMISSIONS WERE RECORDED ON BOTH KINESCOPE FILM RECORDERS AND MAGNETIC TAPE RECORDERS. A CATHODE-RAY TUBE RECONSTRUCTED THE ORIGINAL IMAGE, WHICH WAS THEN PHOTOGRAPHED ON 35-MM FILM. THE FULL-SCAN CAMERA SYSTEM BEGAN TRANSMITTING PICTURES AT 1308 UT ON JULY 31, 1964, 17 MIN 13 SEC PRIOR TO IMPACT. THE PARTIAL-SCAN SYSTEM INITIATED TRANSMISSION OF PICTURES AT 1312 UT, 13 MIN 40 SEC PRIOR TO IMPACT. THE LAST FULL-SCAN TRANSMISSION OCCURRED BETWEEN 2.5 AND 5 SEC BEFORE IMPACT, WHILE THE LAST PARTIAL-SCAN PICTURE WAS TAKEN BETWEEN 0.2 AND 0.4 SEC BEFORE IMPACT AND ACHIEVED RESOLUTION TO 0.5 M. IMAGE MOTION IS MORE SEVERE IN THE LAST PICTURES. THE EXPERIMENT RETURNED 4308 PHOTOGRAPHS OF EXCELLENT QUALITY.

DATA SET NAME- LUNAR PHOTOGRAPHS

NSSDC ID 64-041A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/31/64 TO 07/31/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 4302 PHOTOGRAPHS OF THE MOON THAT PROVIDE INFORMATION ABOUT SMALL TOPOGRAPHIC FEATURES OF THE LUNAR SURFACE. THE TOTAL FULL-SCAN AND PARTIAL-SCAN DATA TRANSMITTED BY THE EXPERIMENT ARE CONTAINED ON ONE REEL OF EASTMAN KODAK TYPE-5285 35-MM FILM. IT IS A DUPLICATE NEGATIVE OF THE MASTER POSITIVE PRINTS WHICH WERE MATCHED VERY CLOSELY TO ACHIEVE THE DENSITY DISTRIBUTION OF THE ORIGINAL NEGATIVE. THE ORIGINAL NEGATIVE WAS OBTAINED FROM TAPE PLAYBACK.

DATA SET NAME- ATLAS OF LUNAR PHOTOGRAPHS

NSSDC ID 64-041A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 07/31/64 TO 07/31/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THREE ATLASES OF PHOTOGRAPHS, OBTAINED FROM THE TELEVISION EXPERIMENT, ENTITLED 'RANGER VII PHOTOGRAPHS OF THE MOON.' 'PART I. CAMERA 'A' SERIES' (NASA SP-61) CONTAINS THE 199 PHOTOGRAPHS TAKEN BY THE A-CAMERA, THE WIDEST ANGLE CAMERA. 'PART II. CAMERA 'B' SERIES' (NASA SP-62) CONTAINS THE 200 PICTURES TAKEN BY THE B-CAMERA. THE RESOLUTION WAS EQUAL TO OR BETTER THAN THE BEST PHOTOGRAPHS OF THE MOON TAKEN WITH EARTH-BASED TELESCOPES. 'PART III. CAMERA 'P' SERIES' (NASA SP-63) INCLUDES 758 OF THE MORE THAN 3900 PHOTOGRAPHS TAKEN BY THE FOUR PARTIAL-SCAN P-CAMERAS. THE ATLASES INCLUDE MISSION AND CAMERA SYSTEM DESCRIPTIONS AND TABLES OF VALUES FOR EACH PICTURE PUBLISHED. THE ATLASES WERE REPRODUCED PHOTOGRAPHICALLY TO PRESERVE THE IMAGE CONTENT OF THE NON-RETOUCHED RECORDS. THE ATLASES CAN BE OBTAINED FROM THE GOVERNMENT PRINTING OFFICE.

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SPACECRAFT NAME- P-11-AS

NSSDC ID 64-045B

OTHER NAMES- RADIATION SATELLITE, 1964-045B

LAUNCH DATE- 08/14/64

DATE LAST SCIENTIFIC DATA RECORDED- 09/01/65

AGENCY- USAF-SSD

SPACECRAFT WEIGHT IN ORBIT-

79 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 08/18/64 ORBIT PERIOD- 127.4 MIN.

APOGEE- 3748. KM ALT

PERIGEE- 275. KM ALT INCLINATION- 95.67 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

P-11-AS WAS A POLAR ORBITING AIR FORCE SCIENTIFIC SATELLITE THAT CARRIED SIX EXPERIMENTS. INSTRUMENTATION ON BOARD INCLUDED SPECTROMETERS AND GEIGER TUBES TO MEASURE ELECTRONS AND PROTONS IN VARIOUS ENERGY RANGES (BOTH DIRECTIONAL AND OMNIDIRECTIONAL EXPERIMENTS), A FARADAY CUP, A VLF EXPERIMENT, AND A MAGNETOMETER. THE SPACECRAFT SPIN AXIS WAS APPROXIMATELY ALIGNED WITH THE EARTH'S SPIN AXIS. TELEMETRY CONSISTED OF FOUR DATA CHANNELS -- TWO TAPE RECORDED, TWO REAL TIME. EACH OF TWO COMMUTATORS HAD ONE REAL-TIME AND ONE TAPE RECORDED CHANNEL. THE SATELLITE OPERATED PERFECTLY FOR 2 WEEKS. THEN ONE OF THE COMMUTATORS TEMPORARILY STOPPED AND THEREAFTER OPERATED INTERMITTENTLY. FOUR WEEKS LATER, THE TAPE RECORDED CHANNEL ON THE OTHER COMMUTATOR FAILED. ON SEPTEMBER 1, 1965, THE TAPE RECORDER FAILED, AND VERY LITTLE SCIENTIFIC DATA WERE OBTAINED AFTER THAT DATE. TO SUMMARIZE TELEMETRY OPERATIONS, ONE REAL-TIME CHANNEL OPERATED THROUGHOUT THE LIFE OF THE SPACECRAFT. THE OTHER REAL-TIME CHANNEL AND ONE TAPE RECORDED CHANNEL OPERATED FOR 1751 ORBITS, OR 41 PERCENT OF THE SPACECRAFT LIFE, AND THE OTHER TAPE CHANNEL LASTED FOR THE FIRST 460 ORBITS, OR 11 PERCENT OF THE SPACECRAFT LIFE.

EXPERIMENT NAME- VLF ELECTRIC FIELD DETECTOR

NSSDC ID 64-045B-06

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

INVESTIGATORS- F.L. SCARF, TRW SYSTEMS GROUP, REDONDC BEACH, CALIF.

DATE LAST USEFUL DATA RECORDED- 09/13/64

#### EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A 45.72-CM WHIP ANTENNA ALIGNED WITH THE SPACECRAFT SPIN AXIS AND CONNECTED TO FOUR BANDPASS CHANNELS EACH WITH A BANDWIDTH OF 15 PERCENT OF THE CENTER FREQUENCY. THE EXPERIMENT, DESIGNED TO MEASURE AMBIENT ELECTRIC FIELDS, HAD A NOISE THRESHOLD OF 400 MICROVOLTS PER METER. A 1 V/M OVERCOUNTER TO INDICATE STRONG EMISSIONS WAS INCLUDED. THE EXPERIMENT HAD EIGHT DATA POINTS PER 1.068 MIN TAKEN IN THE FOLLOWING SEQUENCE -- 1.7, 3.9, 7.35, 14.5 KHZ, OVERCOUNTER, 7.35, 3.9, AND 1.7 KHZ. EACH POINT WAS SEPARATED BY 1 SEC. IN REAL TIME, TRANSMISSION OCCURRED OVER A FEW SPECIFIC GEOGRAPHIC LOCATIONS FOR PERIODS FROM 5 TO 15 MIN EACH. THE ONBOARD TAPE RECORDER PERIODICALLY ALLOWED SAMPLING OF THE FIELDS FOR A COMPLETE ORBIT. DURING PLAYBACK OF THE TAPE DATA, MALFUNCTIONS IN THE SYSTEM CAUSED DATA FROM ALL BUT 16 COMPLETE ORBITS TO BE DEGRADED. ON SEPTEMBER 13, 1964, A DRIFT IN THE VOLTAGE-CONTROLLED OSCILLATOR FREQUENCY FOR THE TAPE RECORDED CHANNEL LIMITED SUBSEQUENT TAPE DATA OBTAINED TO SPORADIC AND NOISY RECORDINGS. A MORE COMPLETE DESCRIPTION OF THE EXPERIMENT CAN BE OBTAINED FROM RADIO SCIENCE, 1, PAGE 939, 1966.

DATA SET NAME- PLOTS OF ELECTRIC FIELD AMPLITUDE CN  
MICROFILM

NSSDC ID 64-045B-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/15/64 TO 09/13/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A SINGLE REEL OF 35-MM MICROFILM CONTAINING TAPE RECORDED DATA FOR 16 ORBITS OCCURRING BETWEEN AUGUST 15, 1964, AND SEPTEMBER 13, 1964. THE LAST ORBIT OF THIS DATA SET CORRESPONDS TO THE 339TH SATELLITE ORBIT. ON THE MICROFILM ARE PLOTS OF ELECTRIC FIELD AMPLITUDES (IN MV/M) IN EACH OF THE FOUR FREQUENCY INTERVALS, AS WELL AS PLOTS OF EPHEMERIS INFORMATION (ALTITUDE, L) AND OF PRECIPITATING ELECTRON DATA.

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SPACECRAFT NAME- EXPLORER 20

NSSDC ID 64-051A

OTHER NAMES- IE-A, S 48, 1964-051A, TOPSI, IE-I

LAUNCH DATE- 08/25/64

DATE LAST SCIENTIFIC DATA RECORDED- 12/29/65

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

44 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 08/25/64

ORBIT PERIOD- 104 MIN.

APOGEE- 1010. KM ALT

PERIGEE- 816. KM ALT

INCLINATION- 79.903 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 20 WAS DESIGNED TO MEASURE ELECTRON DISTRIBUTION, ION DENSITY, AND TEMPERATURE AND TO ESTIMATE COSMIC NOISE LEVELS BETWEEN 2 AND 7 MHZ. ALL OBSERVATIONS WERE AT THE SPACECRAFT, EXCEPT THAT THE SOUNDING TECHNIQUE PERMITTED INFORMATION ABOUT ELECTRON DENSITY TO BE DERIVED FOR LOCATIONS BETWEEN THE SPACECRAFT AND THE F2 MAXIMUM (350 KM). THE SATELLITE WAS A SMALL IONOSPHERIC OBSERVATORY INSTRUMENTED WITH A SIX-FREQUENCY IONOSPHERIC SOUNDER AND AN ION PROBE. A COSMIC NOISE EXPERIMENT USED THE NOISE SIGNAL FROM THE SOUNDER RECEIVERS. THE SATELLITE CONSISTED OF A SHORT CYLINDER, TERMINATED ON EITHER END BY TRUNCATED CONES. THE ION PROBE, MOUNTED ON A SHORT BOOM, EXTENDED FROM THE UPPER CONE. THE SIX SOUNDING ANTENNAS (THREE DIPOLES) EXTENDED FROM THE SATELLITE EQUATOR. ONE PAIR OF 18.3-M ANTENNAS FORMED THE DIPOLE USED FOR THE LOW FREQUENCIES, AND THE OTHER TWO DIPOLES CONSISTED OF FOUR 9.14-M ANTENNAS. THE SATELLITE WAS SPIN STABILIZED AT 1.53 RPM JUST AFTER ANTENNA EXTENSION, WITH THE SPIN AXIS INITIALLY VERY CLOSE TO THE ORBIT PLANE. AT THE END OF 1 YR, THE SPIN HAD SLOWED TO .45 RPM. THERE WAS NO TAPE RECORDER SO THAT DATA COULD BE RECEIVED ONLY IN THE VICINITY OF TELEMETRY STATIONS. TELEMETRY STATIONS WERE LOCATED TO PROVIDE PRIMARY DATA COVERAGE NEAR 80 DEG W PLUS AREAS NEAR HAWAII, SINGAPORE, ENGLAND, AUSTRALIA, AND AFRICA. DATA WERE RECORDED FOR PERIODS OF 0.5 HR TO OVER 4 HR PER DAY DEPENDING UPON AVAILABLE POWER. EVEN THOUGH THERE WERE

PROBLEMS WITH TELEMETRY AND INTERFERENCE, THE EXPERIMENTS OPERATED SATISFACTORILY FOR ABOUT 16 MONTHS. A LARGE SPACECRAFT PLASMA SHEATH PREVENTED THE ION PROBE DATA FROM BEING USEFUL IN SPITE OF ATTEMPTS TO COMPENSATE.

DATA SET NAME- GSFC REFINED WORLD MAPS ON MICROFILM

NSSDC ID 64-051A-00B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/25/64 TO 01/08/66

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITION FOR EACH MINUTE OF GMT. POSITION IS DESCRIBED BY GEOGRAPHIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE AN ELLIPSOID OF REVOLUTION CLOSELY APPROXIMATING THE MEAN EARTH SURFACE. POSITION DATA FOR SPECIAL TIMES (EQUATOR CROSSINGS, NORTHERNMOST AND SOUTHERNMOST POINTS, SUN ENTRANCE AND EXIT, ETC.) ARE ALSO LISTED. LISTINGS ARE COMPUTED AND LISTED BY BOOKS (ONE BOOK FOR EACH EPOCH) OF ABOUT 2 WEEKS OF POSITION/TIME DATA HEADED BY THE ORBIT ELEMENTS AND CONSTANTS USED IN COMPUTATION OF THE POSITIONS. THE DATA ARE CONTAINED ON NINE 100-FT REELS OF 16-MM MICROFILM (AS OF APRIL 1971).

EXPERIMENT NAME- FIXED FREQUENCY IONOSONDE

NSSDC ID 64-051A-01

ORIGINAL EXPERIMENT INSTITUTION- CRPL

INVESTIGATORS- R.W. KNECHT, NOAA , BOULDER, COLO.  
W. CALVERT, NOAA , BOULDER, COLO.  
T.E. VAN ZANDT, NOAA , BOULDER, COLO.  
R.B. NORTON, NOAA , BOULDER, COLO.

DATE LAST USEFUL DATA RECORDED- 12/29/65

EXPERIMENT BRIEF DESCRIPTION

THE FIXED FREQUENCY IONOSONDE WAS A RADIO TRANSMITTER-RECEIVER THAT RECORDED THE TIME DELAY BETWEEN A TRANSMITTED AND A RETURNED RADIO PULSE. SIX SPECIFIC FREQUENCIES FROM 1.5 TO 7.22 MHZ WERE SAMPLED IN SEQUENCE ONCE EVERY 0.105 SEC. SEVERAL DELAY TIMES WERE OFTEN OBSERVED FOR EACH FREQUENCY DUE TO PLASMA RESONANCES, BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, ETC. DELAY TIME WAS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE SIGNAL PATH, AND THE MODE OF PROPAGATION. A TOTAL OF 1450 HR OF DATA WAS ACQUIRED. MOST OF THESE DATA WERE OF ADEQUATE QUALITY TO PREPARE IONOGRAMS. SINCE ONLY TIME IS NOTED ON EACH IONOGRAM, SATELLITE POSITION AND OTHER RELATED INFORMATION MUST BE OBTAINED FROM WORLD MAPS. (SEE DATA SET 64-051A-00B.)

DATA SET NAME- TIME-ORDERED FIXED FREQUENCY IONOGRAMS  
ON MICROFILM

NSSDC ID 64-051A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/25/64 TO 12/29/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED BY RECORDING ALL REFLECTIONS FOR EACH FREQUENCY IN A GIVEN PASS IN ONE SET OF IONOGRAMS. DATA FOR EACH PASS CONSIST OF SIX IONOGRAMS, ONE FOR EACH OF THE SIX FIXED FREQUENCIES (7.22, 5.47, 3.72, 2.85, 2.00, AND 1.50 MHZ). THESE IONOGRAMS SHOW TIME (SUBSATELLITE LOCATION) VS ECHO TIME DELAY (VIRTUAL RANGE) FOR EACH FREQUENCY. THE RESOLUTION ON ANY ONE IONOGRAM IS BETTER THAN 1 KM. THIS DATA SET IS A STANDARD FORM OF REDUCED DATA PREPARED FROM THE ORIGINAL TELEMETRY TAPES BY THE OFFICE OF THE PRINCIPAL INVESTIGATOR. THE DATA ARE AS COMPLETE AS PERMITTED BY LIMITATIONS OF POWER, LACK OF SATELLITE TAPE RECORDER, AND DATA SET PROCESSING FACILITIES. OBSERVATIONS MADE FROM AUGUST 1964 THROUGH DECEMBER 1965 ARE CONTAINED ON 993 REELS OF 35-MM MICROFILM. MOST OF THE DATA COVERAGE IS NEAR THE 80 DEG W MERIDIAN, WITH SOME DATA ALSO OBSERVED IN AREAS NEAR HAWAII, ENGLAND, SINGAPORE, AUSTRALIA, CENTRAL AFRICA, AND SOUTH AFRICA. TIME TICKS AND DIGITAL TIME DATA APPEAR ON THE EDGE OF THE IONOGRAMS. INDEXING INFORMATION FOR THESE DATA IS AVAILABLE AT NSSDC IN DATA SET 64-051A-010.

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SPACECRAFT NAME- NIMBUS 1  
OTHER NAMES- 1564-052A

NSSDC ID 64-052A

LAUNCH DATE- 08/28/64 DATE LAST SCIENTIFIC DATA RECORDED- 09/23/64

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 374.4 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 09/15/64 ORBIT PERIOD- 103.4 MIN.  
APOGEE- 932. KM ALT PERIGEE- 423. KM ALT INCLINATION- 98.663 DEGREES

SPACECRAFT BRIEF DESCRIPTION

NIMBUS 1 WAS A LARGE, STABILIZED, EARTH-ORIENTED SATELLITE WITH AN ELLIPTICAL, SUN-SYNCHRONOUS, POLAR ORBIT. A CIRCULAR ORBIT AT AN ALTITUDE OF 500 N.M. WAS PLANNED, BUT A SHORT SECOND STAGE BURN RESULTED IN AN ECCENTRIC ORBIT WITH A 503-N.M. APOGEE AND A 228-N.M. PERIGEE. NIMBUS 1 WAS THE FIRST OF A SERIES OF SECOND GENERATION METEOROLOGICAL SATELLITES. EXPERIMENTS CONSISTED OF A DAYTIME TELEVISION CAMERA HAVING STORED AND AUTOMATIC PICTURE TRANSMISSION (APT) MODES AND A NIGHTTIME INFRARED (IR) CLOUDCOVER MAPPING CAPABILITY WITH A STORED MODE. THE SATELLITE AND THE EXPERIMENTS OPERATED SUCCESSFULLY. ON SEPTEMBER 23, 1964, AFTER 26 DAYS OF OPERATION, THE SUN-ORIENTED SOLAR ARRAY PADDLES BECAME FIXED IN ONE POSITION, AND THE SPACECRAFT HAD INADEQUATE POWER TO CONTINUE OPERATION.



EXPERIMENT NAME- HIGH-RESOLUTION INFRARED RADIOMETER  
(HRIR)

NSSDC ID 64-052A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- L.L. FOSHEE, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 09/22/64

EXPERIMENT BRIEF DESCRIPTION

THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) EXPERIMENT CONSISTED OF A SINGLE CHANNEL SCANNING RADIOMETER THAT SENSED THE EMITTED THERMAL RADIATION OF THE EARTH IN THE 3.5- TO 4.1-MICRON WAVELENGTH REGION TO PRODUCE CLOUDCOVER PICTURES AND TO MEASURE CLOUDTOP AND TERRAIN TEMPERATURES DURING THE NIGHTTIME PORTION OF THE ORBIT. THE HRIR SUBSYSTEM CONSISTED OF AN OPTICAL SYSTEM, AN INFRARED DETECTOR (LEAD SELENIDE PHOTOCONDUCTIVE MATERIAL), ELECTRONICS, A MAGNETIC TAPE RECORDER, AND A FILTER TO MINIMIZE ATTENUATION EFFECTS BY WATER VAPOR AND CARBON DIOXIDE. THE RADIOMETER HAD AN INSTANTANEOUS FIELD OF VIEW OF ABOUT 0.5 DEG AND SCANNED THE EARTH FROM POLE TO POLE. THE DATA WERE STORED ON TAPE AND TELEMETERED TO GROUND ON COMMAND. THE EXPERIMENT RETURNED GOOD DATA FROM LAUNCH UNTIL THE SOLAR ARRAY PADDLES SUPPLYING POWER TO THE SPACECRAFT FAILED ON SEPTEMBER 23, 1964. FOR A COMPLETE DESCRIPTION OF THE HRIR EXPERIMENT, SEE VOLUME 2 OF 'NIMBUS I HIGH RESOLUTION RADIATION DATA CATALOG AND USERS' MANUAL' (64-052A-03D).

DATA SET NAME- HRIR METEOROLOGICAL RADIATION DATA ON  
TAPE

NSSDC ID 64-052A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/28/64 TO 09/22/64

DATA SET BRIEF DESCRIPTION

THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) DATA ARE CURRENTLY ON 273 MAGNETIC TAPES DESIGNATED AS THE NIMBUS METEOROLOGICAL RADIATION TAPES - HRIR (NMRT-HRIR). THE TAPES, WHICH WERE GENERATED ON AN IBM 7094 COMPUTER, CONTAIN RADIATION VALUES EMITTED WITHIN THE 3.5- TO 4.1-MICRON ATMOSPHERIC WINDOW. THE DATA ARE IN BINARY MODE AT A DENSITY OF 800 BPI WITH ONE ORBIT PER FILE. THE FIRST RECORD OF EACH ORBIT CONTAINS INFORMATION DESCRIBING THE ORBIT. THE SUCCEEDING RECORDS CONTAIN THE RADIATION VALUES, LOCATION, AND TIME OF EACH OBSERVATION. A DETAILED DESCRIPTION AND INDEX FOR THIS DATA SET IS CONTAINED IN 64-052A-03D.

DATA SET NAME- HRIR PHOTOFACSIMILE FILM STRIPS

NSSDC ID 64-052A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/28/64 TO 09/22/64

DATA SET BRIEF DESCRIPTION

THE NIMBUS 1 70-MM HRIR PHOTOFACSIMILE FILM STRIPS CONTAIN NIGHTTIME CLOUD COVER OR THE EARTH'S SURFACE TEMPERATURE FROM THE EMISSION WITHIN THE 3.5- TO 4.1-MICRON ATMOSPHERIC WINDOW. THE FILM STRIPS ARE AVAILABLE IN THE FORM OF EITHER POSITIVE OR NEGATIVE TRANSPARENCIES OR AS POSITIVE PRINTS. EACH PICTURE IS GRIDDED WITH GEOGRAPHIC COORDINATES. DATA SET 64-052A-03C CONTAINS CONTACT PRINTS OF ALL AVAILABLE PHOTOFACSIMILE FILM STRIPS AND SHOULD BE CONSULTED BEFORE ORDERING SPECIFIC DATA.

DATA SET NAME- HRIR DATA CATALOG, PHOTOFACSIMILE FILM STRIPS

NSSDC ID 64-052A-03C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 06/28/64 TO 09/22/64

DATA SET BRIEF DESCRIPTION

VOLUME 1, 'PHOTOFACSIMILE FILM STRIPS,' IS THE FIRST OF TWO VOLUMES OF THE 'NIMBUS 1 HIGH RESOLUTION RADIATION DATA CATALOG AND USERS' MANUAL' WHICH DOCUMENT THE DATA RECEIVED FROM THE NIMBUS 1 HIGH-RESOLUTION INFRARED RADIOMETER EXPERIMENT. IT CONTAINS A COMPLETE DESCRIPTION OF THE EXPERIMENT, DETECTOR CALIBRATION, PERFORMANCE, AND DATA PROCESSING. IT ALSO CONTAINS A COMPLETE INDEX, SUBPOINT TRACK SUMMARIES, AND CONTACT PRINTS OF THE PHOTOFACSIMILE FILM STRIPS. THE PUBLICATION WAS PREPARED BY THE AERONOMY AND METEOROLOGY DIVISION, GODDARD SPACE FLIGHT CENTER.

DATA SET NAME- HRIR DATA CATALOG, RADIATION TAPES

NSSDC ID 64-052A-03D

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 06/28/64 TO 09/22/64

DATA SET BRIEF DESCRIPTION

VOLUME 2, 'NIMBUS METEOROLOGICAL RADIATION TAPES - HRIR' IS THE SECOND OF TWO VOLUMES OF THE 'NIMBUS 1 HIGH RESOLUTION RADIATION DATA CATALOG AND USERS' MANUAL' WHICH DOCUMENT THE DATA RECEIVED FROM THE NIMBUS 1 HIGH-RESOLUTION INFRARED RADIOMETER EXPERIMENT. IT CONTAINS A COMPLETE DESCRIPTION OF THE EXPERIMENT, PERFORMANCE, AND DATA ACQUISITION AND PROCESSING. VARIOUS APPENDIXES CONTAIN A COMPLETE INDEX TO THE NIMBUS METEOROLOGICAL RADIATION TAPES - HRIR (NMRT-HRIR), CALIBRATION, LOCATION, AND TAPE FORMATS. THE INDEX OF THE NMRT-HRIR (APPENDIX A IN THIS VOLUME) IS DUPLICATED IN A SEPARATE PUBLICATION, 'APPENDIX G, INDEX OF AVAILABLE NIMBUS 1 HRIR DATA.' THESE PUBLICATIONS WERE PREPARED BY THE AERONOMY AND METEOROLOGY DIVISION OF GODDARD SPACE FLIGHT CENTER.

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SPACECRAFT NAME- OGO 1  
OTHER NAMES- EOGO 1, 1964-054A, OGO-A  
NSSDC ID 64-054A  
LAUNCH DATE- 09/05/64 DATE LAST SCIENTIFIC DATA RECORDED- 11/25/69  
AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 487 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 09/07/64 ORBIT PERIOD- 3839 MIN.  
APOGEE-149385. KM ALT PERIGEE- 281. KM ALT INCLINATION- 31.2 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 1 SPACECRAFT, THE FIRST OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS IN ORDER TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET AND TO DEVELOP AND OPERATE A STANDARDIZED OBSERVATORY-TYPE SPACECRAFT. OGO 1 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS DESIGNED TO BE EARTH POINTING (+Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS INTENDED TO BE PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS. THE OPEP'S WERE MOUNTED ON, AND COULD ROTATE ABOUT, AN AXIS WHICH WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE MAIN BODY. DUE TO A BOOM DEPLOYMENT FAILURE SHORTLY AFTER ORBITAL INJECTION, THE SPACECRAFT WAS PUT INTO A PERMANENT SPIN MODE OF 5 RPM ABOUT THE Z AXIS. THIS SPIN AXIS REMAINED FIXED WITH A DECLINATION OF ABOUT -10 DEG AND RIGHT ASCENSION OF ABOUT 40 DEG. AT LAUNCH, THE LOCAL TIME OF APOGEE WAS 2100 HR. OGO 1 CARRIED 20 EXPERIMENTS. TWELVE OF THESE WERE PARTICLE STUDIES AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EXPERIMENT FOR EACH OF THE FOLLOWING TYPES OF STUDIES -- INTERPLANETARY DUST, VLF, LYMAN-ALPHA, GEGENSCHNEIN, ATMOSPHERIC MASS, AND RADIO ASTRONOMY. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, AND 64 KBS DEPENDING ON THE DISTANCE OF THE SPACECRAFT FROM THE EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDE-BAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDE-BAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. BECAUSE OF THE BOOM DEPLOYMENT FAILURE, THE BEST OPERATING MODE FOR THE DATA HANDLING SYSTEM WAS THE USE OF ONE OF THE WIDE-BAND TRANSMITTERS AND THE DIRECTIONAL ANTENNA. ALL DATA RECEIVED FROM THE OMNIDIRECTIONAL ANTENNA WERE NOISY. DURING SEPTEMBER 1964, ACCEPTABLE DATA WERE RECEIVED OVER 70 PERCENT OF THE ORBITAL PATH. BY JUNE 1969, DATA ACQUISITION WAS LIMITED TO 10 PERCENT OF THE ORBITAL PATH. ON NOVEMBER 25, 1969, OGO 1 WAS PLACED IN A SAFE-STANDBY MODE. AT THE PRESENT TIME (MARCH 1971) THE SPACECRAFT IS TURNED OFF, BUT IT IS STILL CAPABLE OF PRODUCING DATA.

DATA SET NAME- GSFC EXTENDED MASTER ORBIT WORLD MAPS ON  
MICROFILM

NSSDC ID 64-054A-00C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/64 TO 06/05/67

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITION AND SUPPORTING INFORMATION FOR EACH MINUTE OF GMT. THE INFORMATION PROVIDED IN THESE LISTINGS INCLUDES GEOCENTRIC POSITION, INERTIAL POSITION, DEFINITION OF THE SATELLITE VELOCITY VECTOR, AND SATELLITE POSITION IN THE MAGNETIC DIPOLE FIELD AND IN THE 'REAL' MAGNETIC (MCILWAIN) FIELD. THE DATA ARE CONTAINED ON TWENTY-FIVE 100-FT REELS OF 16-MM MICROFILM (AS OF APRIL 1971).

DATA SET NAME- ANALYZED, CONDENSED, ORBIT/ATTITUDE TAPE  
COVERING DATA TIME SPAN OF 64-054A-16

NSSDC ID 64-054A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/07/64 TO 12/02/64

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONTAINS ON ONE TAPE, SUPPLIED BY THE EXPERIMENTER, A. KONRADI, A CONDENSED SET OF THE ORBIT/ATTITUDE PARAMETERS REQUIRED FOR ANALYSIS OF OGO 1 EXPERIMENT NUMBER 16 (64-054A-16) FOR THE COMPLETE LIFE OF THAT EXPERIMENT. THE DATA WERE EXTRACTED FROM THE ORBIT/ATTITUDE TAPES SUPPLIED BY THE OGO PROJECT. THE TAPE IS 9-TRACK WRITTEN ON AN IBM 360/75 COMPUTER IN ODD PARITY (BINARY MODE) AT 1600 BPI. IT HAS A STANDARD OS/360 HEADER LABEL WITH VOLUME SERIAL NUMBER W00291 AND CONTAINS ONE FILE OF INFORMATION. THE INFORMATION IS WRITTEN IN FIXED BLOCKED RECORDS 10,600 BYTES LONG. EACH BLOCKED RECORD CONTAINS 100 LOGICAL RECORDS, EACH 106 BYTES LONG. EACH LOGICAL RECORD CONTAINS 28 FIELDS OF INFORMATION. THE INFORMATION INCLUDES -- DATE AND TIME (UT), ORBIT NUMBER, SATELLITE POSITION IN BOTH INERTIAL AND B.L COORDINATES, MODEL GEOMAGNETIC FIELD STRENGTH AND DIRECTION AT THE SATELLITE, WHETHER THE SATELLITE WAS IN A STABILIZED OR SPINNING MODE OR MODE UNKNOWN, THE SPIN PERIOD AND AXIS DIRECTION, AND THE ORIENTATION OF THE OPEP.

EXPERIMENT NAME- WIDE-BAND AND NARROW-BAND STEP  
FREQUENCY VLF RECEIVERS

NSSDC ID 64-054A-08

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- R.A. HELLIWELL, STANFORD U , PALO ALTO, CALIF.  
J.J. ANGERAMI, STANFORD U , PALO ALTO, CALIF.  
L.H. RORDEN, STANFORD U , PALO ALTO, CALIF.

DATE LAST USEFUL DATA RECORDED- 04/00/70

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF FOUR VLF RADIO RECEIVERS TO BE USED FOR STUDY OF NATURAL VLF NOISE OCCURRENCES AT ORBITAL ALTITUDES. THE RECEIVER SYSTEMS CONSISTED OF AN INFLATABLE 2.9-M-DIAMETER LOOP ANTENNA, A PREAMPLIFIER STAGE AT THE END OF A LONG BCOM, AND THE RECEIVER ELECTRONICS PACKAGES IN THE MAIN BODY OF THE SATELLITE. THREE STEP-FREQUENCY RECEIVERS, COVERING FREQUENCY RANGES 0.2 TO 1.6, 1.6 TO 12.5, AND 12.5 TO 100 KHZ, EACH OBSERVED A COMPLETE SPECTRUM OF 256 SIGNAL STRENGTH VALUES ONCE EVERY 2.3, 18.4, OR 147.2 SEC DEPENDING UPON THE SELECTED MODE OF OPERATION. OBSERVATIONS FROM THESE THREE RECEIVERS WERE TAPE RECORDED AT 1 KBS OR OBSERVED IN REAL TIME AT 1, 8, OR 64 KBS. THE TAPE WAS READ OUT UPON COMMAND AT THE 64-KBS RATE. THE OTHER RECEIVER WAS A BROADBAND RECEIVER OBSERVING SIGNALS FROM 0.3 TO 12.5 KHZ. THESE DATA WERE NOT TAPE RECORDED BUT WERE OBSERVED ONLY IN REAL TIME ON THE SPECIAL PURPOSE TELEMETRY CHANNEL. DATA FROM THE THREE RECEIVERS (CALLED PCM DATA) WERE RECORDED FOR OVER HALF THE TIME IN ORBIT, WITH THE HIGH BIT RATE USUALLY USED WHEN THE SATELLITE WAS NEAR PERIGEE AND THE LOW BIT RATE NEAR APOGEE. BROADBAND RESOLUTION DEPENDED UPON THE SPECTRUM ANALYZER USED TO PROCESS THE TAPE. THIS RAYSPAN EQUIPMENT COULD PROVIDE UP TO 10-MSEC TIME RESOLUTION AND UP TO 30-HZ FREQUENCY RESOLUTION. THE BROADBAND DATA ARE AVAILABLE ONLY FOR RELATIVELY SHORT PORTIONS OF THE SATELLITE OPERATING LIFETIME SINCE THEY WERE RECEIVED ONLY WHEN THE SATELLITE WAS SCHEDULED AND IN RANGE OF A TELEMETRY STATION. THIS EXPERIMENT OPERATED NOMINALLY DURING THE ACTIVE SATELLITE LIFETIME. A MAY 1966 STANFORD RESEARCH INSTITUTE INSTRUMENT REPORT, 'INSTRUMENTS FOR THE STANFORD UNIVERSITY/STANFORD RESEARCH INSTITUTE VLF EXPERIMENT (4917) ON THE ECGO SATELLITE,' BY L.H. RORDAN ET AL., GIVES A DESCRIPTION OF THIS EXPERIMENT.

DATA SET NAME- LOW-RESOLUTION VLF SPECTROGRAMS ON 35-MM  
PAPER

NSSDC ID 64-054A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/10/64 TO 12/15/65

DATA SET BRIEF DESCRIPTION

THESE SPECTROGRAMS ARE REDUCED DATA PLOTS PRODUCED BY RAYSPAN EQUIPMENT ON 35-MM PAPER SHOWING TIME OF SIGNAL OCCURRENCE VS FREQUENCY OF RECEIVED VLF SIGNALS. RELATIVE SIGNAL INTENSITY CAN BE QUALITATIVELY JUDGED ONLY BY CONTRAST BETWEEN THE BACKGROUND AND THE SIGNAL TRACES. THESE DATA ARE IN AN ORIGINAL FORM THAT WAS PREPARED DIRECTLY FROM THE FIRST TWO CHANNELS OF THE SPECIAL PURPOSE TELEMETRY TAPES. THEY ARE RECORDS OF SIGNALS RECEIVED BY THE 0.3- TO 12.5-KHZ BROADBAND RECEIVER AND TRANSMITTED IN REAL TIME WHEN THE SATELLITE WAS IN RANGE OF A TELEMETRY STATION. DATA SET REQUIREMENTS, BASED UPON DATA ANTICIPATED TO BE MOST USEFUL, WERE MESHED WITH SPACECRAFT POWER AND ORBIT CHARACTERISTICS IN ORDER TO SCHEDULE OBSERVATION TIMES. THESE DATA REPRESENT ALL VLF BROADBAND OBSERVATIONS MADE PRIOR TO DECEMBER 15, 1965. SUBSEQUENT OBSERVATIONS HAVE NOT BEEN PROCESSED AND/OR RELEASED BY THE EXPERIMENTER. THE DATA CONSIST OF 35-MM POSITIVE PHOTOGRAPHIC PAPER ON THIRTY-SEVEN 100-FT REELS. THEY ARE LOW-RESOLUTION DATA, HAVING BEEN PHOTOGRAPHED WITH LOW PAPER TRANSPORT SPEEDS. A PRIMARY USE FOR THIS DATA

FORM IS IN IDENTIFICATION OF DATA THAT MAY PROVIDE INTERESTING CASES TO STUDY WITH HIGH-RESOLUTION PROCESSING OF THE SAME DATA. THE ORIGINAL TAPES AND PROCESSING AT VARIOUS TRANSPORT SPEEDS ARE AVAILABLE THROUGH THE DATA SET CONTACT, DR. J. KATSUFRAKIS, AT STANFORD UNIVERSITY. SINCE ONLY TIME IS NOTED ON THE SONOGRAMS, SATELLITE POSITION AND OTHER RELATED INFORMATION MUST BE OBTAINED FROM WORLD MAPS. (SEE DATA SET 64-054A-00C.)

DATA SET NAME- HIGH-RESOLUTION VLF SPECTROGRAMS ON  
35-MM FILM

NSSDC ID 64-054A-08B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/21/65 TO 11/24/65

DATA SET BRIEF DESCRIPTION

THESE SPECTROGRAMS ARE REDUCED DATA PLOTS PRODUCED BY RAYSPAN EQUIPMENT ON 35-MM FILM SHOWING TIME OF SIGNAL OCCURRENCE VS FREQUENCY OF RECEIVED VLF SIGNALS. RELATIVE SIGNAL INTENSITY CAN BE QUALITATIVELY JUDGED ONLY BY CONTRAST BETWEEN THE BACKGROUND AND THE SIGNAL TRACES. THESE DATA ARE IN AN ORIGINAL FORM THAT WAS PREPARED DIRECTLY FROM THE FIRST TWO CHANNELS OF THE SPECIAL PURPOSE TELEMETRY TAPES. THEY ARE RECORDS OF SIGNALS RECEIVED BY THE 0.3- TO 12.5-KHZ BROADBAND RECEIVER AND TRANSMITTED IN REAL TIME WHEN THE SATELLITE WAS IN RANGE OF A TELEMETRY STATION. THESE DATA ARE THOSE OF PARTICULAR INTEREST TO THE INVESTIGATOR AND WERE SELECTED FROM THE LOW-RESOLUTION DATA (64-054A-08A). THESE DATA ARE ON SIXTEEN 100-FT ROLLS OF 35-MM FILM PRODUCED FROM THE ORIGINAL TELEMETRY TAPES AT HIGHER FILM TRANSPORT SPEEDS THAN THE LOW-RESOLUTION DATA. THE HORIZONTAL (TIME) AXIS IS THUS STRETCHED BY AT LEAST A FACTOR OF 2 OVER THE LOW-RESOLUTION DATA. THESE DATA INCLUDE LESS THAN 0.2 OF THE LOW-RESOLUTION DATA. SINCE ONLY TIME IS NOTED ON THE SONOGRAMS, SATELLITE POSITION AND OTHER RELATED INFORMATION MUST BE OBTAINED FROM WORLD MAPS. (SEE DATA SET 64-054A-00C.)

DATA SET NAME- VLF SIGNAL STRENGTH VS FREQUENCY ON  
16-MM CINE FILM

NSSDC ID 64-054A-08C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/07/64 TO 12/29/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF GRAPHICAL REPRESENTATIONS OF VLF SIGNAL STRENGTH VS FREQUENCY ARRANGED CHRONOLOGICALLY ON 16 REELS OF 16-MM CINE FILM. THESE DATA HAVE BEEN THROUGH CONSIDERABLE PROCESSING IN ORDER TO PROVIDE CONVENIENT REFERENCE TO ORBIT AND OTHER SELECTED GEOPHYSICAL INFORMATION THAT MAY BE USEFUL. EACH DATA FRAME CONSISTS OF TWO PARTS. ON THE LEFT SIDE ARE THREE GRAPHS, EACH PERTAINING TO A PARTICULAR RECEIVER AND COVERING ONE OF THE RANGES BETWEEN 0.2, 1.6, 12.5, AND 100 KHZ. THE GRAPHS SHOW FREQUENCY VS MAGNETIC FIELD INTENSITY IN DECIBELS (REFERENCED TO 1 GAMMA RMS). FOR FIXED FREQUENCY OPERATION, FREQUENCY IS REPLACED BY A TIME SCALE. THE RIGHT HALF OF EACH FRAME SHOWS PICTORIALY THE SATELLITE POSITION IN

ORBIT LOOKING BOTH PERPENDICULAR TO AND PARALLEL TO THE EQUATORIAL PLANE. TIME, ILLUMINATION, L, K, AND OTHER DIGITAL DATA FOR THE TIME AND/OR POSITION OF OBSERVATION ARE INCLUDED ON THE FRAME IN DIGITAL FORM. DATA PRESENTLY AVAILABLE INCLUDE ALL OBSERVATIONS TAKEN PRIOR TO DECEMBER 1965. SUBSEQUENT OBSERVATIONS HAVE NOT BEEN PROCESSED AND/OR RELEASED BY THE EXPERIMENTER. THESE DATA INCLUDE BOTH REAL-TIME OBSERVATIONS AND OBSERVATIONS TAPE RECORDED ON THE SPACECRAFT. ADDITIONAL INFORMATION AND ILLUSTRATIONS OF THESE DATA ARE IN A JULY 1967 STANFORD RESEARCH INSTITUTE REPORT, 'SUMMARY OF DIGITAL DATA PROCESSING SYSTEMS FOR THE OGO SU/SRI VERY-LOW-FREQUENCY EXPERIMENTS,' BY W.E. BLAIR AND B.P. FICKLIN.

EXPERIMENT NAME- SOLAR COSMIC RAYS

NSSDC ID 64-054A-12

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- K.A. ANDERSON, U OF CALIFORNIA, BERK, BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 11/25/69

#### EXPERIMENT BRIEF DESCRIPTION

THIS INSTRUMENTATION CONSISTED OF A CESIUM IODIDE CRYSTAL SURROUNDED BY A PLASTIC ANTICOINCIDENCE SHIELD AND OPTICALLY COUPLED TO A PHOTOMULTIPLIER TUBE. THE SYSTEM ALSO CONTAINED A 32-CHANNEL PULSE HEIGHT ANALYZER. ALTHOUGH THE PRINCIPAL OBJECTIVE OF THIS EXPERIMENT WAS TO MEASURE 3- TO 90-MEV SOLAR PROTONS, THE DETECTOR HAD NO ABILITY TO DISCRIMINATE BETWEEN DIFFERENT KINDS OF PARTICLES. THE SYSTEM WAS MOUNTED IN ONE OF THE TWO SOEP'S AND HAD A 38-DEG ACCEPTANCE CONE ANGLE. INFLIGHT CALIBRATION WAS PROVIDED. COUNTS IN GROUPS OF FOUR CHANNELS, ACCUMULATED OVER 31/32 OF THE TELEMETRY FRAME TIME (1.152, 0.144, OR 0.018 SEC), WERE READ OUT DURING SUCCESSIVE TELEMETRY FRAMES. SOME TIME BEFORE THE EXPERIMENT WAS TURNED ON, THE ANTICOINCIDENCE SYSTEM FAILED. THIS RESULTED IN HIGH BACKGROUND RATES DUE TO GALACTIC COSMIC RAYS. THUS, THE DATA ARE USEFUL FOR STUDIES OF EVENT MORPHOLOGY BUT NOT FOR DETERMINATION OF ABSOLUTE FLUXES. ALTHOUGH THE DETECTOR AXIS WAS INTENDED TO POINT TOWARD THE SUN, A MALFUNCTION IN THE OGO 1 ATTITUDE CONTROL SYSTEM PREVENTED THIS. OTHERWISE, THE EXPERIMENT PERFORMED WELL FROM LAUNCH THROUGH NOVEMBER 25, 1969, WHEN ALL EXPERIMENTS ABOARD OGO 1 WERE TURNED OFF.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES ON TAPE

NSSDC ID 64-054A-12A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/30/65 TO 05/03/66

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BINARY TAPE GENERATED BY THE EXPERIMENTER ON AN IBM 360/40 SYSTEM. THE TAPE CONTAINS 35 FILES, EACH CONTAINING A VARIABLE NUMBER OF RECORDS CHOSEN FOR THEIR SOLAR FLARE

INFORMATION. THE FIRST 120 CHARACTERS OF EACH FILE IS AN IDENTIFICATION HEADER CONTAINING, AMONG OTHER THINGS, THE FILE AND TAPE NUMBERS OF THE ORIGINAL DATA TAPES, THE RATE AT WHICH THE DATA WERE TELEMETERED, WHETHER THE DATA WERE REAL TIME OR PLAYBACK, AND THE START TIME OF THE DATA IN YEAR, DAY OF THE YEAR, AND SECONDS OF THE DAY. EACH DATA RECORD CONSISTS OF 1044 SIX-BIT CHARACTERS. THE FIRST 12 CHARACTERS CONTAIN SOEP ENVIRONMENT INFORMATION. THE NEXT EIGHT CHARACTERS CONTAIN THE DAY OF THE YEAR AND MILLISECOND OF THE DAY FOR THE FIRST DATA VALUE. THE REMAINING 1024 CHARACTERS CONTAIN 12 ACCUMULATIONS FOR EACH OF THE 32 CHANNELS. FOR TELEMETRY RATES OF 1, 8, AND 64 KBS, EACH RECORD CONTAINS 147.456, 18.432 AND 2.304 SEC OF DATA, RESPECTIVELY. THE FIRST 15 FILES CONTAIN DATA ASSOCIATED WITH THE OCTOBER 4, 1965, SOLAR FLARE. FILES 16 THROUGH 25 CONTAIN DATA ASSOCIATED WITH THE MARCH 24, 1966, SOLAR FLARE. FILES 26 THROUGH 35 CONTAIN DATA ASSOCIATED WITH THE MAY 2, 1966, SOLAR FLARE.

EXPERIMENT NAME- TRAPPED RADIATION SCINTILLATION  
COUNTER

NSSDC ID 64-054A-16

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- A. KONRADI, NASA-MSC , HOUSTON, TEXAS  
L.R. DAVIS, NASA-GSFC , GREENBELT, MD.  
R.A. HOFFMAN, NASA-GSFC , GREENBELT, MD.  
J.M. WILLIAMSON, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 12/02/64

#### EXPERIMENT BRIEF DESCRIPTION

OGO-1 EXPERIMENT B-05 WAS DESIGNED TO MEASURE THE DIRECTIONAL ENERGY FLUX OF 10- TO 100-KEV ELECTRONS AND THE DIRECTIONAL INTENSITY AND SPECTRUM OF 120- TO 4500-KEV PROTONS FOR STUDIES OF TRAPPED RADIATION. THE DETECTOR WAS A ZINC SULFIDE SCINTILLATION COUNTER LOOKING THROUGH VARIABLE THICKNESS ABSORBERS MOUNTED ON A STEPPING WHEEL.

DATA SET NAME- COMPLETE REDUCED AND ANALYZED  
PROTON-ELECTRON DATA ON MAGNETIC TAPE

NSSDC ID 64-054A-16A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/07/64 TO 11/16/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FOUR 9-TRACK BINARY TAPES WRITTEN ON AN IBM 360/75 COMPUTER WITH ODD PARITY AT 800 BPI. THE TAPES, AS SUPPLIED BY THE EXPERIMENTER, CONTAIN ONE FILE AND DO NOT CONTAIN STANDARD OS/360 TAPE LABELS. THE TAPES CONTAIN A COMPLETE SET OF ION-ELECTRON DETECTOR DATA INCLUDING BOTH THE REDUCED DATA AT A 1-KBS RATE AND THE ANALYZED DATA



TRANSMITTED AT 8 OR 64 KBS, WHICH, ON THESE TAPES, HAVE BEEN CONDENSED TO AN EQUIVALENT 1-KBS SAMPLING RATE. THE DATA ARE WRITTEN ON THE TAPES IN FIXED BLOCKED RECORDS 5184 BYTES LONG. EACH BLOCKED RECORD CONTAINS EIGHT LOGICAL RECORDS, EACH 648 BYTES LONG. EACH LOGICAL RECORD CONTAINS TIME (UT), THE DETECTOR CURRENTS AND COUNT RATES MEASURED DURING ONE REVOLUTION OF THE ABSORBER WHEEL, A SERIES OF HOUSEKEEPING PARAMETERS, ORBIT AND ATTITUDE PARAMETERS DEFINING THE SATELLITE POSITION IN GEOCENTRIC INERTIAL, GEOMAGNETIC, MAGNETOSPHERIC, AND ECLIPTIC COORDINATES, AND THE DETECTOR ORIENTATION. THE DATA ARE TIME ORDERED, AND DATA OVERLAPS HAVE BEEN REMOVED.

DATA SET NAME- HIGH BIT RATE REDUCED PROTON-ELECTRON  
DATA ON MAGNETIC TAPE

NSSDC ID 64-054A-16B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/07/64 TO 11/16/65

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET CONSISTS OF SEVEN 7-TRACK BINARY TAPES WRITTEN ON AN IBM 360/75 COMPUTER WITH ODD PARITY AT 800 BPI. THE TAPES, AS SUPPLIED BY THE EXPERIMENTER, CONTAIN ONE FILE EACH AND DO NOT CONTAIN STANDARD OS/360 TAPE LABELS. THE TAPES CONTAIN THE ION-ELECTRON DETECTOR DATA TRANSMITTED AT THE 8- OR 64-KBS RATES BUT NONE OF THE 1-KBS RATE DATA. THE DATA ARE WRITTEN ON THE TAPES IN FIXED BLOCKED RECORDS 5664 BYTES LONG. EACH BLOCKED RECORD CONTAINS FOUR LOGICAL RECORDS, EACH 1416 BYTES LONG. EACH LOGICAL RECORD CONTAINS TIME (UT), THE DETECTOR CURRENTS AND COUNT RATES MEASURED DURING 1/2 OR 1/16 REVOLUTION OF THE DETECTOR ABSORBER WHEEL, A SERIES OF HOUSEKEEPING PARAMETERS, ORBIT AND ATTITUDE PARAMETERS DEFINING THE SATELLITE POSITION IN GEOCENTRIC INERTIAL, GEOMAGNETIC, MAGNETOSPHERIC, AND ECLIPTIC COORDINATES, AND THE DETECTOR ORIENTATION. THE DATA ARE TIME ORDERED, AND DATA OVERLAPS HAVE BEEN REMOVED. THE SAME DATA, COMPRESSED TO BE EQUIVALENT TO 1-KBS SAMPLED DATA, ALONG WITH THE DATA RECORDED AT 1 KBS, ARE IN DATA SET 64-054A-16A.

EXPERIMENT NAME- COSMIC-RAY SPECTRA AND FLUXES

NSSDC ID 64-054A-18

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.

DATE LAST USEFUL DATA RECORDED- 11/25/69

EXPERIMENT BRIEF DESCRIPTION

THREE SOLID-STATE PARTICLE TELESCOPES WERE USED TO MEASURE THE INTENSITY AND ENERGY DISTRIBUTION OF COSMIC RAYS. A DE/DX VS E TELESCOPE (COMPOSITION TELESCOPE) RESOLVED THE NUCLEAR COMPOSITION OF COSMIC RAYS IN THE ENERGY RANGE FROM 22 TO 103 MEV/NUCLEON (CHARGE RESOLUTION RANGED THROUGH Z=26, IRON). A DE/DX VS RANGE TELESCOPE (PROTON-ALPHA TELESCOPE) DETECTED PROTONS

AND ALPHA PARTICLES IN THE ENERGY RANGE FROM 1.4 TO 33 MEV/NUCLEON, AND A SINGLE ELEMENT LOW-ENERGY PROTON TELESCOPE (OPEP TELESCOPE) WAS PRIMARILY SENSITIVE TO PROTONS IN THE ENERGY RANGE FROM 1.4 TO 3.7 MEV. THE COMPOSITION AND THE PROTON-ALPHA TELESCOPES WERE ORIENTED PARALLEL TO THE SPACECRAFT Z AXIS. PULSE HEIGHT INFORMATION WAS OBTAINED FROM THE COMPOSITION TELESCOPE USING ONE 256-CHANNEL AND TWO 512-CHANNEL PULSE HEIGHT ANALYZERS. THIS ALLOWED PULSE HEIGHT ANALYSIS OF PARTICLES IN FOUR ENERGY INTERVALS -- FOR PROTONS 5 TO 11 MEV, 11 TO 22 MEV, 22 TO 103 MEV, AND GREATER THAN 103 MEV. PULSE HEIGHT INFORMATION SENT BACK FROM THE PROTON-ALPHA TELESCOPE ALLOWED PULSE HEIGHT ANALYSIS OF PARTICLES IN TWO ENERGY RANGES -- FOR PROTONS 1.4 TO 8.6 MEV AND 8.6 TO 33 MEV. THIS TRANSMISSION USED ONE 256-CHANNEL PULSE HEIGHT ANALYZER WHILE COUNT RATE INFORMATION WAS SENT BACK FROM ALL THREE TELESCOPES. THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.02 SEC TO ABOUT ONE MEASUREMENT PER 147 SEC DEPENDING ON THE COUNTING MODE AND THE TELEMETRY BIT RATE. THE SPACECRAFT UNINTENDED INITIAL SPIN PERIOD ABOUT THE Z AXIS WAS ABOUT 12 SEC. THE EXPERIMENT WAS FULLY OPERATIONAL AS OF NOVEMBER 25, 1969, WHEN THE SATELLITE WAS PLACED IN AN OPERATIONAL SAFE-STANDBY MODE.

DATA SET NAME- REDUCED COUNT RATE DATA ON MAGNETIC TAPE NSSDC ID 64-054A-18A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/06/64 TO 11/25/67

#### DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A COPY OF THE ORIGINAL REDUCED DATA ON THIRTY-FIVE 7-TRACK, IBM 7094, BINARY TAPES WRITTEN AT 800 BPI AND CONTAINING COUNT RATES ORDERED BY SOLAR ROTATION NUMBER. THE TAPES DO NOT CONTAIN ORBITAL DATA OR PULSE HEIGHT DATA. EACH TAPE HAS A 24-CHARACTER (SIX BITS/CHARACTER) HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF FILES. EACH FILE HAS A 144-CHARACTER HEADER RECORD, FOLLOWED BY A VARIABLE NUMBER OF RECORDS THAT HAVE A TOTAL LENGTH OF 3972 CHARACTERS, FOLLOWED BY A FILE TRAILER RECORD (24 CHARACTERS).

DATA SET NAME- DIGITAL AND ANALOG COUNT RATE PLOTS ON MICROFILM NSSDC ID 64-054A-18B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/07/64 TO 11/25/67

#### DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A STANDARD SET OF DIGITAL AND ANALOG PLOTS ON ONE REEL OF 35-MM MICROFILM SELECTED FROM THE MORE INTERESTING OGO 1 HALF-HOUR AVERAGE RATES PREPARED ON A CALCOMP PLOTTER. EACH PLOT COVERS ONE SOLAR ROTATION. THESE RATES WERE OBTAINED FROM COINCIDENCES AND ANTICOINCIDENCES OF COUNTERS, AS WELL AS FROM SOME COUNTER RATES.

DATA SET NAME- PULSE HEIGHT ANALYZER DATA ON MAGNETIC  
TAPE

NSSDC ID 64-054A-18C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/04/66 TO 11/25/67

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON THREE 7-TRACK, IBM 7094, BINARY MAGNETIC TAPES WRITTEN AT 800 BPI AND ORDERED BY SOLAR ROTATION NUMBER. THE PULSE HEIGHT ANALYSIS WAS CARRIED OUT FOR TWO OF THE DE/DX VS RANGE TELESCOPE COINCIDENCE COMBINATIONS CORRESPONDING TO PROTON ENERGIES FROM 1.4 TO 8.6 MEV AND FROM 8.6 TO 33 MEV (D1' NOT D2' NOT D4' AND D1'D2' NOT D4'). EACH TAPE HAS A 56-CHARACTER HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF FILES. EACH FILE HAS A 25-CHARACTER HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF RECORDS (4098 CHARACTERS/RECORD).

DATA SET NAME- U OF CHICAGO COUNTING RATE TAPE LOG FOR  
64-054A-18A

NSSDC ID 64-054A-18D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/06/64 TO 11/25/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A LOG OF THE COUNTING RATE DATA SET (64-054A-18A) ON ONE REEL OF 16-MM MICROFILM. PROVIDED BY THE PRINCIPAL INVESTIGATOR, THE DATA ARE IN TABULAR FORM ORDERED BY SOLAR ROTATION NUMBER. EACH LINE IN THIS LOG REFERS TO A SINGLE FILE IN THE ORIGINAL TAPES, AND EACH LINE CONTAINS AN ORIGINAL U OF CHICAGO TAPE NUMBER, START AND STOP TIMES OF OBSERVATION, TELEMETRY BIT RATE (1, 8, OR 64 KBS), NUMBER OF PHYSICAL RECORDS, AND DATA QUALITY INFORMATION. THERE ARE ABOUT 200 PAGES IN THE LOG.

DATA SET NAME- U OF CHICAGO PULSE HEIGHT ANALYZER TAPE  
LOG FOR 64-054A-18C

NSSDC ID 64-054A-18E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/04/66 TO 11/25/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A LOG, ON ONE REEL OF 16-MM MICROFILM, OF THE PULSE HEIGHT DATA SET (64-054A-18C) PROVIDED BY THE PRINCIPAL INVESTIGATOR IN TABULAR FORM ORDERED BY SOLAR ROTATION NUMBER. EACH LINE IN THIS LOG REFERS TO A SINGLE FILE IN THE ORIGINAL MAGNETIC TAPES, AND EACH LINE CONTAINS AN ORIGINAL U OF CHICAGO TAPE NUMBER, THE START AND STOP TIMES OF

OBSERVATION, THE TELEMETRY BIT RATE (1, 8, OR 64 KBS), THE NUMBER OF PHYSICAL RECORDS, AND DATA QUALITY INFORMATION. THE LOG CONSISTS OF ABOUT 50 PAGES.

EXPERIMENT NAME- IONIZATION CHAMBER

NSSDC ID 64-054A-20

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- J.R. WINCKLER, U OF MINNESOTA, MINNEAPOLIS, MINN.  
S.R. KANE, U OF CALIFORNIA, BERK, BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 11/25/69

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, DESIGNED TO MEASURE THE IONIZATION DUE TO PRIMARY COSMIC RAYS, CONSISTED OF A 17.78-CM-DIAMETER INTEGRATING IONIZATION CHAMBER WITH A RESETTING DRIFT-TYPE ELECTROMETER. THE SYSTEM WAS MOUNTED ON A 1.2-M BOOM EXTENDING FROM THE MAIN BODY OF THE SPACECRAFT ALONG THE -Y AXIS. THE CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 0.6 AND 12 MEV, RESPECTIVELY, AND TO 10- TO 50-KEV X RAYS. THE IONIZATION CURRENT WAS MEASURED BY A VACUUM TUBE ELECTROMETER WHOSE OUTPUT, AS A FUNCTION OF TIME, WAS AN AUTOMATICALLY RESETTING SAWTOOTH RAMP VOLTAGE BETWEEN 0 AND 5 V. DATA WERE TELEMETERED IN THREE INDEPENDENT FORMS THROUGH THREE DIGITAL WORDS AND ONE ANALOG WORD, EACH OF WHICH WAS TELEMETERED ONCE EVERY 1.152 SEC WHEN THE OGO SYSTEM WAS OPERATING AT 1 KBS. THE SAMPLING RATE LINEARLY INCREASED WITH THE TELEMETRY RATE. THIS EXPERIMENT PERFORMED WELL FROM LAUNCH THROUGH NOVEMBER 25, 1969, WHEN ALL EXPERIMENTS ABOARD OGO 1 WERE TURNED OFF.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS  
TIME ON MICROFILM

NSSDC ID 64-054A-20A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/12/64 TO 06/05/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE. EACH OF THE 244 FRAMES CONTAINS DATA FOR UP TO ONE THIRD OF AN ORBIT. APPROXIMATELY 30 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 12, 1964, TO JUNE 5, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- ORIGINAL REDUCED PULSE RATES ON TAPE

NSSDC ID 64-054A-20B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/08/64 TO 12/06/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SEVENTEEN 7-TRACK BINARY TAPES WRITTEN AT 556 BPI ON AN IBM 7094. EACH TAPE, SUBMITTED BY THE EXPERIMENTER, IS MADE UP OF AN ARBITRARY NUMBER OF RECORDS AND COVERS AN ARBITRARY AMOUNT OF TIME. THE RECORDS ARE OF VARIABLE LENGTH RANGING FROM 21 TO 1000 48-BIT WORDS. THE FIRST 20 WORDS CONSTITUTE A HEADER THAT INDICATES, AMONG OTHER THINGS, THE RATE AT WHICH THE DATA WERE TELEMETERED, THE START AND END TIMES OF THE RECORD, THE NUMBER OF WORDS IN THE RECORD, AND WHETHER OR NOT THE RECORD IS IN EXACT TIME ORDER. EACH SUCCESSIVE SET OF THREE WORDS CONTAINS ONE 10-SEC AVERAGED PULSE RATE. THE FIRST WORD IN THE SET CONTAINS THE START TIME OF THE AVERAGE IN MSEC OF THE DAY. THE SECOND WORD CONTAINS THE ACTUAL DURATION OF THE AVERAGE (WHICH MAY BE SHORTER THAN 10 SEC BECAUSE OF NOISE FILTERING), THE NUMBER OF VOLTAGE RAMPS IN THE AVERAGE, AND WHETHER THE AVERAGE IS BASED ON UNFILTERED RAMPS, FILTERED RAMPS, CLOCK PULSES, OR ANALOG WORDS. THE THIRD WORD GIVES THE AVERAGED PULSE RATE IN NORMALIZED PULSES PER SECOND. ALL THE RECORDS HAVE BEEN ORDERED BY START TIME OF THE RECORD, AND CONSIDERABLE OVERLAP MAY EXIST IN THE TIME COVERED BY CONSECUTIVE RECORDS. THE DATA ON THESE TAPES COVER THE PERIOD FROM SEPTEMBER 8, 1964, TO DECEMBER 6, 1967.

DATA SET NAME- ATLAS OF 10- TO 50-KEV SOLAR FLARE X  
                  RAYS ON MICROFILM

NSSDC ID 64-054A-20C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/02/65 TO 05/28/67

DATA SET BRIEF DESCRIPTION

AN ION CHAMBER NORMALLY USED FOR PARTICLE MEASUREMENTS ALSO RESPONDED TO BURSTS OF HARD (10 TO 50 KEV) X RAYS THAT OCCURRED DURING SOLAR FLARES. THESE SOLAR X-RAY BURSTS WERE IDENTIFIED AND SEPARATED FROM THE PARTICLE DATA. THE X-RAY DATA ARE ANALYZED DATA ON ONE REEL OF 35-MM MICROFILM AND ARE COPIES OF RESEARCH REPORTS CONTAINING PLOTS OF THE EXCESS ION CHAMBER RATE VS TIME. SHORTWAVE FADEOUTS AND SOLAR RADIO BURSTS, WHICH ACCOMPANIED THE SOLAR X-RAY BURSTS, ARE ALSO INDICATED ON THE PLOTS. DATA FROM OGO 3 DATA SET 66-049A-23D ARE ALSO INCLUDED.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS L  
                  ON MICROFILM

NSSDC ID 64-054A-20D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/07/64 TO 06/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 322 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE VS L (IN EARTH RADII). EACH FRAME PRESENTS 2 HR OF PLAYBACK DATA FOR L VALUES BETWEEN 1 AND 8. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES AND AN INDICATION OF WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. APPROXIMATELY 65 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 4, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- TABULATIONS OF HOURLY AVERAGED PULSE  
RATES ON MICROFILM

NSSDC ID 64-054A-20E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/05/64 TO 12/06/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. THE PULSING RATE OF THE ION CHAMBER, IN NORMALIZED PULSES PER SECOND, IS GIVEN IN FOUR FORMS -- UNFILTERED PULSES, FILTERED PULSES, CLOCK PULSES, AND ANALOG WORD PULSES. EACH OF THE RATES REPRESENTS DATA AVERAGED OVER A PERIOD OF 1 HR. ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, AN INDICATION OF WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 60 PERCENT OF THE PERIOD FROM SEPTEMBER 5, 1964, TO DECEMBER 6, 1967.

DATA SET NAME- TABULATIONS OF 1-MIN AVERAGED PULSE  
RATES ON MICROFILM

NSSDC ID 64-054A-20F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/05/64 TO 12/06/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FOUR REELS OF 16-MM MICROFILM THAT WERE GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. THE PULSING RATE OF THE ION CHAMBER, IN NORMALIZED PULSES PER SECOND, IS PRESENTED IN FOUR FORMS -- UNFILTERED PULSES, FILTERED PULSES, CLOCK PULSES, AND ANALOG WORD PULSES. EACH OF THE RATES REPRESENTS DATA AVERAGED OVER A PERIOD OF 1 MIN. ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, AN INDICATION OF WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THESE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 60 PERCENT OF THE PERIOD FROM SEPTEMBER 5, 1964, TO DECEMBER 6, 1967.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED PULSE RATES VS  
SPACECRAFT RADIAL DISTANCE ON MICROFILM

NSSDC ID 64-054A-20G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/07/64 TO 06/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 441 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 (ON A LOGARITHMIC SCALE) VS SPACECRAFT RADIAL DISTANCE R (IN EARTH RADII). EACH FRAME PRESENTS APPROXIMATELY 20 HR OF PLAYBACK DATA FOR R VALUES BETWEEN 1 AND 23. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES AND AN INDICATION OF WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. APPROXIMATELY 60 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 4, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED LINEAR PULSE  
RATES VS TIME ON MICROFILM

NSSDC ID 64-054A-20H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/10/64 TO 06/05/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 VS TIME. EACH OF THE 436 FRAMES CONTAINS DATA FROM APPROXIMATELY ONE THIRD OF AN ORBIT. APPROXIMATELY 40 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 10, 1964, TO JUNE 5, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED PULSE RATES VS  
TIME ON MICROFILM

NSSDC ID 64-054A-20I

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/07/64 TO 06/05/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE. EACH OF THE 262 FRAMES CONTAINS DATA FOR UP TO ONE ORBIT (APOGEE TO APOGEE). APPROXIMATELY 70 PERCENT OF THE ORBITS

DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 5, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS  
TIME (NEAR PERIGEE) ON MICROFILM

NSSDC ID 64-054A-20J

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/15/64 TO 05/27/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE. EACH OF THE 125 FRAMES CONTAINS DATA FOR A REGION UP TO 2 HR ON EITHER SIDE OF PERIGEE. APPROXIMATELY 50 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 15, 1964, TO MAY 27, 1966, ARE REPRESENTED IN THIS DATA SET.

EXPERIMENT NAME- ELECTRON SPECTROMETER

NSSDC ID 64-054A-21

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- J.R. WINCKLER, U OF MINNESOTA, MINNEAPOLIS, MINN.  
K.A. PFITZER, U OF MINNESOTA, MINNEAPOLIS, MINN.

DATE LAST USEFUL DATA RECORDED- 11/25/69

EXPERIMENT BRIEF DESCRIPTION

THE FIVE-CHANNEL ELECTRON SPECTROMETER CONSISTED OF AN ANALYZING ELECTROMAGNET, A PLASTIC SCINTILLATOR CRYSTAL, A PHOTOMULTIPLIER TUBE, AND A PULSE HEIGHT ANALYZER. THE ANALYZING ELECTROMAGNET WAS USED TO DEFINE THE FIVE ENERGY CHANNELS. THE PULSE HEIGHT ANALYZER ACCEPTED ONLY PULSES CORRESPONDING TO THE PARTICULAR ENERGY CHANNEL BEING SAMPLED. IN THIS WAY, THE BACKGROUND DUE TO BREMSSTRAHLUNG AND PENETRATING PARTICLES WAS REDUCED BECAUSE ONLY THOSE BACKGROUND PULSES IN THE NARROW ENERGY BAND BEING ANALYZED WERE COUNTED. THIS SYSTEM WAS MOUNTED IN THE MAIN BODY OF THE SPACECRAFT AND LOOKED OUT IN A DIRECTION 10 DEG OFF THE SPACECRAFT -Z AXIS WITH A 15-DEG ACCEPTANCE CONE. SINCE OGO 1 WAS SPIN STABILIZED (ABOUT ITS Z AXIS) SHORTLY AFTER LAUNCH, THE ACCEPTANCE CONE WAS EFFECTIVELY INCREASED TO 35 DEG. DIRECTIONAL MEASUREMENTS OF ELECTRONS WERE MADE IN FIVE CONTIGUOUS, LOGARITHMICALLY EQUAL ENERGY CHANNELS BETWEEN 50 AND 4000 KEV. BACKGROUND PARTICLES WERE COUNTED BY OPERATING THE SPECTROMETER WITHOUT THE ELECTROMAGNET. THE SYSTEM SAMPLED THE FIVE SPECTRAL INTERVALS AND FIVE BACKGROUND INTERVALS EVERY 2.304 SEC WHEN THE OGO 1 SYSTEM WAS OPERATING AT 1 KES. THE SAMPLING RATE INCREASED LINEARLY WITH THE TELEMETRY BIT RATE. DATA FROM EACH OF THE FIVE CHANNELS WERE TELEMETERED AS ONE DIGITAL WORD. THIS EXPERIMENT PERFORMED WELL FROM LAUNCH THROUGH NOVEMBER 25, 1969, WHEN



ALL EXPERIMENTS ABOARD OGO 1 WERE TURNED OFF.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED COUNT RATES VS  
TIME (RADIATION BELTS) ON MICROFILM

NSSDC ID 64-054A-21A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/15/64 TO 05/27/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE LOGARITHM OF THE COUNT RATE VS TIME FOR EACH OF THE FIVE CHANNELS. THE COUNT RATE, WHICH HAS BEEN CORRECTED FOR BACKGROUND, MAY BE CONVERTED TO A FLUX VALUE BY USING A CONVERSION FACTOR SUPPLIED BY THE EXPERIMENTER. EACH OF THE 116 PLOTS PRESENTED CONTAINS APPROXIMATELY 3 HR OF DATA FOR THAT PORTION OF THE ORBIT IN THE VICINITY OF THE RADIATION BELTS. THESE DATA COVER APPROXIMATELY 60 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 15, 1964, TO MAY 27, 1966. NO EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- PLOTS OF COUNTS VS R CN MICROFILM

NSSDC ID 64-054A-21B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/07/64 TO 06/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 417 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE 15-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATE (PLOTED ON A LOGARITHMIC SCALE) VS R (IN EARTH RADII) BETWEEN 1 AND 10 FOR EACH OF THE FIVE CHANNELS. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES, THE ORBIT NUMBER, AND WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. THE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 70 PERCENT OF THE ORBITS IN THE PERIOD SEPTEMBER 7, 1964, TO JUNE 4, 1967. NO ADDITIONAL EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES CN TAPE

NSSDC ID 64-054A-21C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/07/64 TO 06/05/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ELEVEN 7-TRACK, 556-BPI, IBM 7094, BINARY TAPES

GENERATED BY THE EXPERIMENTER. EACH TAPE CONTAINS ONE FILE OF REDUCED DATA. THE FILE IS MADE UP OF AN ARBITRARY NUMBER OF RECORDS AND COVERS AN ARBITRARY AMOUNT OF TIME. THE RECORDS ARE OF VARIABLE LENGTH - 21 TO 1000 48-BIT WORDS. THE FIRST 20 OF THESE WORDS CONSTITUTE A HEADER WHICH INDICATES, AMONG OTHER THINGS, THE RATE AT WHICH THE DATA WERE TELEMETERED, THE START AND END TIMES OF THE RECORD, AND THE NUMBER OF WORDS IN THE RECORD. THE DATA WORDS ARE GROUPED INTO 40-WORD DATA FRAMES WITHIN WHICH DATA FROM EACH OF THE FIVE SPECTROMETER CHANNELS ARE PRESENTED FOUR TIMES AND BACKGROUND COUNTS FROM EACH CHANNEL ARE PRESENTED THREE TIMES. THE REMAINING FIVE WORDS ARE SYNCHRONIZATION WORDS. THE FIRST SIX BITS OF EACH DATA WORD INDICATE THE CHANNEL AND WHETHER THE DATA ARE ANALYSIS OR BACKGROUND COUNTS. THE NEXT 12 BITS CONTAIN THE DATA IN THE FORM OF ACCUMULATED COUNTS. ONLY NONZERO DATA ARE PRESENTED. THE REMAINING 30 BITS CONTAIN THE STARTING TIME OF THE ACCUMULATION CYCLE. THE ACCUMULATED COUNTS MAY BE CONVERTED TO A FLUX VALUE BY USING CONVERSION FACTORS SUPPLIED BY THE EXPERIMENTER. ALL THE RECORDS HAVE BEEN TIME ORDERED ACCORDING TO START TIME OF THE RECORD, SO CONSIDERABLE OVERLAP MAY EXIST IN THE TIME COVERED BY CONSECUTIVE RECORDS.

DATA SET NAME- TABULATION OF 5-MIN AVERAGED COUNT RATES      NSSDC ID 64-054A-21D  
ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/07/64 TO 06/05/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SIX REELS OF 16-MM MICROFILM THAT WERE GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUPPLIED BY THE EXPERIMENTER. DATA FOR EACH 5-MIN PERIOD FOR EACH OF THE FIVE CHANNELS INCLUDE TOTAL COUNTS, TOTAL BACKGROUND COUNTS, AVERAGE COUNT RATE, AVERAGE BACKGROUND COUNT RATE, AND AVERAGE NET COUNT RATE (AVERAGE COUNT RATE MINUS AVERAGE BACKGROUND COUNT RATE). ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 60 PERCENT OF THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 5, 1967.

DATA SET NAME- PLOTS OF COUNTS VS L ON MICROFILM      NSSDC ID 64-054A-21E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/07/64 TO 06/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 322 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE 2- AND 5-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATE ON A LOGARITHMIC SCALE VS L (IN EARTH RADII) FOR EACH OF THE FIVE CHANNELS. THE 2-MIN

AVERAGES ARE PRESENTED ONLY FOR THOSE L VALUES THAT ARE LESS THAN 3, WHILE THE 5-MIN AVERAGES ARE PRESENTED ONLY FOR THOSE L VALUES GREATER THAN 3. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES, ORBIT NUMBER, AND WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 75 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 4, 1967. NO ADDITIONAL EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- TABULATIONS OF COUNTS VS TIME AT  
DISCRETE L VALUES ON MICROFILM

NSSDC ID 64-054A-21F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/15/64 TO 12/05/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. TIME-ORDERED COUNT RATES, CORRECTED FOR BACKGROUND, FROM EACH OF THE FIVE CHANNELS ARE PRESENTED FOR EACH OF 12 DISCRETE L VALUES. THE L VALUES ARE IN THE RANGE 1.3 TO 2.8. ALSO PRESENTED ARE THE DATES AND THE EQUATORIAL PITCH ANGLES. THE COUNT RATES MAY BE CONVERTED TO FLUXES BY USING A CONVERSION FACTOR SUPPLIED BY THE EXPERIMENTER. THESE DATA COVER APPROXIMATELY 30 PERCENT OF THE PERIOD FROM SEPTEMBER 15, 1964, TO DECEMBER 5, 1965.

DATA SET NAME- PLOTS OF 5-MIN AVERAGED COUNT RATES VS  
TIME ON MICROFILM

NSSDC ID 64-054A-21G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/07/64 TO 06/05/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 5-MIN AVERAGES OF THE LOGARITHM OF THE COUNT RATE VS TIME FOR EACH OF THE FIVE CHANNELS. THE COUNT RATE, WHICH HAS BEEN CORRECTED FOR BACKGROUND, MAY BE CONVERTED TO A FLUX VALUE BY USING A CONVERSION FACTOR SUPPLIED BY THE EXPERIMENTER. EACH OF THE 230 PLOTS PRESENTED CONTAINS DATA FROM APPROXIMATELY ONE THIRD OF AN ORBIT, WITH PERIGEE NEAR THE CENTER OF THE PLOT. THESE DATA COVER APPROXIMATELY 60 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 5, 1967. NO EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- COUNT RATES VS TIME FOR DISCRETE L  
VALUES ON MICROFILM

NSSDC ID 64-054A-21H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/--/64 TO 12/--/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS PRODUCED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. EACH PAIR OF FRAMES PRESENTS COUNT RATES (ON A LOGARITHMIC SCALE), WHICH HAVE BEEN NORMALIZED TO AN EQUATORIAL PITCH ANGLE OF 90 DEG, VS TIME FOR EACH OF THE FIVE SPECTROMETER CHANNELS. DATA FROM CHANNELS 1, 3, AND 5 ARE PLOTTED ON ONE FRAME, AND DATA FROM CHANNELS 2 AND 4 ARE PLOTTED ON A SECOND FRAME. EACH FRAME PRESENTS DATA FOR A SPECIFIC L VALUE BETWEEN 1.3 AND 2.8. THE TIME PERIOD COVERED BY THESE DATA IS SEPTEMBER 1964 TO DECEMBER 1965, WITH EACH HALF-MONTH PERIOD INDICATED BY A TICK MARK. THESE COUNT RATES CAN BE REDUCED TO FLUX VALUES BY USING CONVERSION FACTORS SUPPLIED BY THE EXPERIMENTER.

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SPACECRAFT NAME- EXPLORER 21

NSSDC ID 64-060A

OTHER NAMES- IMP 2, IMP-B, S 74A, 1964-060A

LAUNCH DATE- 10/04/64

DATE LAST SCIENTIFIC DATA RECORDED- 10/13/65

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

61.24 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 10/04/64

ORBIT PERIOD- 2097 MIN.

APOGEE- 95400. KM ALT

PERIGEE- 193. KM ALT

INCLINATION- 33.5 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 21 (IMP 2) WAS A SOLAR CELL AND CHEMICAL BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9-SEC DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE AT NOON, A SPIN RATE OF 14.6 RPM, AND A SPIN DIRECTION OF 41.4 DEG RIGHT ASCENSION AND 47.4 DEG DECLINATION. THE SIGNIFICANT DEVIATION OF THE SPIN RATE AND DIRECTION FROM THEIR PLANNED VALUES AND THE ACHIEVEMENT OF AN APOGEE LESS THAN HALF THE PLANNED VALUE ADVERSELY AFFECTED DATA USEFULNESS. OTHERWISE, SPACECRAFT SYSTEMS PERFORMED WELL, WITH NEARLY COMPLETE DATA TRANSMISSION FOR THE FIRST 4 MONTHS AND FOR THE SIXTH MONTH AFTER LAUNCH. DATA TRANSMISSION WAS INTERMITTENT FOR OTHER TIMES, AND THE FINAL TRANSMISSION OCCURRED ON OCTOBER 13, 1965.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID 64-060A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/04/64 TO 09/30/65

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF SIX 7-TRACK, 556-BPI, IBM 7094, BINARY MAGNETIC TAPES PROVIDED BY N.F. NESS. THE TAPES LIST THE FOLLOWING INFORMATION AT 5-MIN INTERVALS -- (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE IMP 2 SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT.

EXPERIMENT NAME- RETARDING POTENTIAL ANALYZER

NSSDC ID 64-060A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- G.P. SERBU, NASA-GSFC, GREENBELT, MD.  
E.J.R. MAIER, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 10/13/65

EXPERIMENT BRIEF DESCRIPTION

THE RETARDING POTENTIAL ANALYZER WAS A FOUR-ELEMENT FARADAY CUP. IT WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS AND HAD AN EFFECTIVE LOOK ANGLE OF 5 STER. THE EXPERIMENT OPERATED FOR 5.2 SEC IN EACH OF FOUR MODES ONCE EVERY 648 SEC. IN TWO MODES, 15-STEP SPECTRA FOR IONS WERE DETERMINED FOR RETARDING POTENTIALS IN THE RANGES MINUS 5 V TO PLUS 15 V AND MINUS 5 V TO PLUS 45 V. IN THE OTHER TWO MODES, SIMILAR INFORMATION FOR ELECTRONS WAS OBTAINED BY CHANGING THE SIGNS OF THE POTENTIALS. THE INSTRUMENT EXPERIENCED SECONDARY ELECTRON CONTAMINATION BUT RETURNED DATA DURING THE ENTIRE SPACECRAFT LIFETIME. FOR A MORE COMPLETE EXPERIMENT DESCRIPTION, SEE J. GEOPHYS. RES., 71, PAGE 3755, 1967.

DATA SET NAME- ANALYZED ELECTRON TEMPERATURE AND  
DENSITY VALUES ON MAGNETIC TAPE

NSSDC ID 64-060A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 10/05/64 TO 04/04/65

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA, GENERATED BY THE EXPERIMENTER, ARE ON ONE IBM 7094, 7-TRACK, 800-BPI, EVEN PARITY, BCD MAGNETIC TAPE WITH EIGHTEEN 155-CHARACTER LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA TAKEN AT RADIAL DISTANCES FROM THE EARTH OF LESS THAN 5 EARTH RADII WILL PROBABLY BE THE MOST USEFUL. THE TIME-ORDERED TAPE CONTAINS A MEASURE OF THE ELECTRON DENSITY, TEMPERATURES FOR A TWO-ENERGY COMPONENT MAXWELLIAN FIT TO THE DATA, AND A MEASURE OF THE SPACECRAFT POTENTIAL. EPHEMERIS DATA ARE

INCLUDED.

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID 64-060A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- N.F. NESS, NASA-GSFC , GREENBELT, MD.  
D.H. FAIRFIELD, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 04/05/65

EXPERIMENT BRIEF DESCRIPTION

EACH OF TWO UNIAXIAL FLUXGATE MAGNETOMETERS, HAVING DYNAMIC RANGES OF PLUS OR MINUS 40 GAMMAS, SAMPLED THE MAGNETIC FIELD 30 TIMES WITHIN EACH OF SIX 4.8-SEC INTERVALS EVERY 5.46 MIN. DETECTOR SENSITIVITIES WERE PLUS OR MINUS 0.25 GAMMA, AND DIGITIZATION UNCERTAINTY WAS PLUS OR MINUS 0.40 GAMMA. A RUBIDIUM VAPOR MAGNETOMETER WAS USED TO CALIBRATE THE FLUXGATES BUT DID NOT PRODUCE AN INDEPENDENTLY USEFUL DATA SET. THE FLUXGATES FUNCTIONED NORMALLY THROUGHOUT THE USEFUL LIFE OF THE SATELLITE.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON BINARY TAPE

NSSDC ID 64-060A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/04/64 TO 04/05/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE 9-TRACK, 800-BPI, BINARY MAGNETIC TAPES WRITTEN ON AN IBM 360 COMPUTER. THE TIME-ORDERED, ANALYZED, FLUXGATE MAGNETOMETER DATA ARE AS RECEIVED FROM THE EXPERIMENTER -- 5.46-MIN AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM. TIME OF COVERAGE EXTENDS FROM OCTOBER 4, 1964, THROUGH APRIL 5, 1965, WITH 75 PERCENT COVERAGE. INCOMPLETE EPHEMERIS INFORMATION (RADIAL DISTANCE ONLY) IS CONTAINED ON THE TAPES.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON BCD TAPE

NSSDC ID 64-060A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/04/64 TO 04/05/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE GENERATED

AT NSSDC AND CONTAINS THE SAME DATA FOUND IN DATA SET 64-060A-02A.

DATA SET NAME- 5.46-MIN VECTOR MAGNETIC FIELD DATA  
MERGED WITH EPHEMERIS DATA ON TAPE

NSSDC ID 64-060A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/04/64 TO 04/05/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPE GENERATED AT NSSDC. THE FLUXGATE DATA CONTAINED IN DATA SET 64-060A-02A ARE MERGED WITH COMPLETE EPHEMERIS DATA GIVEN IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON REFORMATTED TAPE

NSSDC ID 64-060A-02E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/04/64 TO 04/05/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES ON WHICH THE DATA OF DATA SET 64-060A-02A HAVE BEEN BLOCKED 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES WERE GENERATED AT NSSDC.

EXPERIMENT NAME- COSMIC-RAY RANGE VS ENERGY LOSS

NSSDC ID 64-060A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.  
C.Y. FAN, U OF ARIZONA , TUCSON, ARIZ.  
G. GLOECKLER, U OF MARYLAND , COLLEGE PARK, MD.

DATE LAST USEFUL DATA RECORDED- 04/09/65

EXPERIMENT BRIEF DESCRIPTION

A CHARGED PARTICLE SOLID-STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY RANGE IS PROPORTIONAL TO  $Z^2$  SQUARED/A FOR PROTONS 0.9 TO 190 MEV, 6.5 TO 19 MEV, 19 TO 90 MEV, AND 90 TO 190 MEV) AND CHARGE SPECTRA ( $Z \leq 6$ ). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE

TELEMETERED SIX TIMES EVERY 5.46 MIN. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 4.1 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR ACCUMULATIONS. USEFUL DATA WERE OBTAINED FROM LAUNCH UNTIL APRIL 9, 1965. DATA COVERAGE WAS INTERMITTENT THROUGHOUT THE LIFE OF THE SPACECRAFT DUE TO FREQUENT SPACECRAFT SHUTOFFS AND SPORADIC FAILURE OF SOME DETECTORS.

DATA SET NAME- REDUCED ACCUMULATOR COUNTS AND PULSE HEIGHT ANALYSIS DATA ON MAGNETIC TAPE NSSDC ID 64-060A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/04/64 TO 04/09/65

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED COUNT RATE AND PULSE HEIGHT ANALYSIS DATA ON THREE 7-TRACK MAGNETIC TAPES. THE TAPES WERE WRITTEN ON AN IBM 7094 COMPUTER AT 556 BPI, IN A BINARY FORMAT, ODD PARITY, WITH 36-BIT WORDS (SIX CHARACTERS PER WORD). THE DATA ARE TIME ORDERED FOR THE PERIOD OCTOBER 4, 1964, TO APRIL 9, 1965, AND CONTAIN NO ORBIT/ATTITUDE INFORMATION. EACH TAPE CONTAINS A NUMBER OF PHYSICAL RECORDS, EACH OF WHICH IS 804 WORDS (4824 CHARACTERS) LONG. EACH PHYSICAL RECORD CONTAINS SIX 134-WORD LOGICAL RECORDS. EACH TAPE CONTAINS TWO FILES. THESE DATA ARE ALSO AVAILABLE IN A MORE COMPACT FORM IN DATA SETS 64-060A-03D (COUNT ACCUMULATION DATA) AND 64-060A-03E (PULSE HEIGHT DATA).

DATA SET NAME- DATA TIME GAPS (.GE. 1 HR) AND QUALITY CHECKS FOR 64-060A-03A ON MICROFILM NSSDC ID 64-060A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 10/04/64 TO 04/09/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS A CATALOG IS COMPOSED OF OUTPUT FROM THREE COMPUTER PROGRAMS WRITTEN AT NSSDC DISPLAYING THE DIGITAL DATA OF DATA SET 64-060A-03A, ALONG WITH LISTINGS OF THE COMPUTER PROGRAMS, ON ONE REEL OF 16-MM MICROFILM. THE FOLLOWING TYPES OF OUTPUT ARE INCLUDED -- (1) A FREQUENCY DISTRIBUTION OF UNIVERSITY OF CHICAGO DATA FLAGS, (2) TIME GAPS IN THE DATA GREATER THAN OR EQUAL TO 1 HR AND A MATRIX OF THE NUMBER OF TIMES A TIME GAP OF A GIVEN SIZE OCCURS PER TAPE, AND (3) A PRINTOUT OF CERTAIN DATA AS THEY ARE FOUND ON A TAPE. OUTPUTS (1) AND (2) WERE GENERATED FROM ALL OF THE TAPES OF 64-060A-03A. ONLY THE FIRST 204 RECORDS OF THE FIRST FILE OF ONE OF THE TAPES (TAPE NUMBER 001597) WERE READ TO GENERATE OUTPUT (3).



DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) ON  
MICROFILM

NSSDC ID 64-060A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/04/64 TO 04/07/65

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF MACHINE-GENERATED COUNT RATE PLOTS FOR THE TELESCOPE SENSOR COMBINATIONS (D1, D1D2 NOT D3, D1D2D3 NOT D4, AND D1D2D3D4) WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.9 TO 190 MEV, 6.5 TO 19 MEV, 19 TO 90 MEV, AND 90 TO 190 MEV. EACH PLOT GIVES THE COUNT RATE (LOGARITHMIC) VS TIME (DAY NUMBER) FOR ONE SOLAR ROTATION. THE PLOTS ARE ON ONE REEL OF 35-MM MICROFILM THAT CONTAINS A TOTAL OF 32 PLOTS. THERE ARE EIGHT PLOTS FOR EACH OF THE FOUR SENSOR COMBINATIONS. THE TIME INTERVAL COVERED IS FROM SOLAR ROTATION NUMBER 1795 (OCTOBER 4, 1964) THROUGH 1802 (APRIL 7, 1965).

DATA SET NAME- REDUCED COUNT ACCUMULATION DATA ON  
MAGNETIC TAPE

NSSDC ID 64-060A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/04/64 TO 04/09/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED COUNT ACCUMULATIONS ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 204 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 134 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE ACCUMULATIONS -- D1, D1D2 NOT D3, D1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190, 6.5 TO 19, 19 TO 90, 90 TO 190, AND ABOUT 1 MEV. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION AND DATA QUALITY INFORMATION. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN, AND EACH ACCUMULATION WAS ABOUT 40 SEC LONG. THE ACCUMULATION DATA IN THIS DATA SET ARE A REFORMATTED AND PREFERRED VERSION OF THOSE IN DATA SET 64-060A-03A.

DATA SET NAME- REDUCED PULSE HEIGHT ANALYZER DATA ON  
MAGNETIC TAPE

NSSDC ID 64-060A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/04/64 TO 04/09/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 200 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 134 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA -- D1 AND D3 DETECTOR ELEMENT PULSE HEIGHTS (CORRESPONDING TO INCIDENT PROTON ENERGY THRESHOLDS OF 0.9 AND 19 MEV, RESPECTIVELY), TIME OF OBSERVATION, ORBIT NUMBER, AND DATA QUALITY INFORMATION. THE OUTPUT FROM THE TWO 128-CHANNEL ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR COUNT RATE DATA. THE PULSE HEIGHT DATA IN THIS DATA SET ARE A REFORMATTED AND PREFERRED VERSION OF THOSE IN DATA SET 64-060A-03A.

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID 64-060A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- K.A. ANDERSON, U OF CALIFORNIA, BERK , BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/13/65

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, DESIGNED TO MEASURE FLUXES OF GEOMAGNETICALLY TRAPPED PARTICLES, CONSISTED OF A 7.6-CM-DIAMETER NEHER-TYPE IONIZATION CHAMBER AND TWO ANTON 223 GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1 AND 17 MEV, RESPECTIVELY. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS GREATER THAN 45 KEV SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A FULL ANGLE OF 61 DEG, AND ITS AXIS OF SYMMETRY MADE AN ANGLE OF 59.5 DEG WITH THE SPACECRAFT SPIN AXIS. GM TUBE A RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. GM TUBE B LOOKED DIRECTLY INTO SPACE THROUGH A HOLE IN THE SPACECRAFT SKIN. THE ACCEPTANCE CONE FOR GM TUBE B HAD A FULL ANGLE OF 38 DEG, AND ITS AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT SPIN AXIS. OMNIDIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. DIRECTIONALLY, IT RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 40 AND 500 KEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER WERE ACCUMULATED FOR 326.08 SEC AND READ OUT ONCE EVERY 327.68 SEC. COUNTS FROM GM TUBE A WERE ACCUMULATED FOR 39.36 SEC AND READ OUT SIX TIMES EVERY 327.68 SEC. COUNTS FROM GM TUBE B WERE ACCUMULATED FOR 39.36 SEC AND READ OUT FIVE TIMES EVERY 327.68 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH OCTOBER 13, 1965, THE DATE OF THE LAST USEFUL DATA TRANSMISSION.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES ON TAPE

NSSDC ID 64-060A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/05/64 TO 04/05/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, BCD, 800-BPI TAPE THAT WAS SUBMITTED BY THE EXPERIMENTER. THE FIRST FILE ON THE TAPE IS A 12-CHARACTER INDEX THAT IDENTIFIES THE ORIGINAL GSFC TAPE FROM WHICH THE DATA WERE TAKEN. FOLLOWING EACH INDEX ARE A VARIABLE NUMBER OF 1032-CHARACTER DATA RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS AND A 24-CHARACTER GROUP THAT AGAIN IDENTIFIES THE DATA WITH RESPECT TO THE ORIGINAL GSFC TAPE. EACH LOGICAL RECORD CONTAINS THE UT (DAY, HR, MIN, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL AND POLAR SOLAR ANGLES, SATELLITE SPIN PERIOD, AND A NUMBER OF PROCESSING ERROR FLAGS. THESE DATA, WHICH ARE NOT TIME ORDERED, COVER THE PERIOD FROM OCTOBER 5, 1964, TO APRIL 5, 1965. A TIME-ORDERED VERSION OF THESE DATA IS FOUND IN DATA SET 64-060A-05B.

DATA SET NAME- TIME-ORDERED COUNT RATES ON TAPE

NSSDC ID 64-060A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/05/64 TO 04/05/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, BCD, 556-BPI TAPE THAT WAS GENERATED AT NSSDC BY TIME ORDERING DATA SET 64-060A-05A. THE FIRST FILE ON THE TAPE IS A 12-CHARACTER INDEX THAT IDENTIFIES THE ORIGINAL GSFC TAPE FROM WHICH THE DATA WERE TAKEN. FOLLOWING EACH INDEX ARE A VARIABLE NUMBER OF 1032-CHARACTER DATA RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS AND A 24-CHARACTER GROUP THAT AGAIN IDENTIFIES THE DATA WITH RESPECT TO THE ORIGINAL GSFC TAPE. EACH LOGICAL RECORD CONTAINS THE UT (DAY, HR, MIN, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL AND POLAR SOLAR ANGLES, SATELLITE SPIN PERIOD, AND A NUMBER OF PROCESSING ERROR FLAGS. THESE DATA COVER THE PERIOD FROM OCTOBER 5, 1964, TO APRIL 5, 1965.

DATA SET NAME- PLOTS OF COUNT RATES AND PULSE RATES VS  
TIME ON MICROFILM

NSSDC ID 64-060A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/04/64 TO 09/23/65

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100 AND THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. THE DATA ARE TIME ORDERED AND CONTAIN NO EPHEMERIS INFORMATION. THE DATA COVER APPROXIMATELY 70 PERCENT OF THE PERIODS FROM OCTOBER 4, 1964, TO FEBRUARY 9, 1965, MARCH 3, 1965, TO APRIL 7, 1965, AND SEPTEMBER 12, 1965, TO SEPTEMBER 23, 1965.

**EXPERIMENT NAME-** SOLAR WIND PROTONS

**NSSDC ID** 64-060A-06

**ORIGINAL EXPERIMENT INSTITUTION-** NASA-ARC

**INVESTIGATORS-** J.H. WOLFE, NASA-ARC , MOFFETT FIELD, CALIF.

**DATE LAST USEFUL DATA RECORDED-** 12/23/64

**EXPERIMENT BRIEF DESCRIPTION**

A QUADRISPHERICAL ELECTROSTATIC ANALYZER WITH A CURRENT COLLECTOR AND AN ELECTROMETER AMPLIFIER WAS INTENDED TO DETECT AND ANALYZE THE POSITIVE ION COMPONENT OF THE INCIDENT PLASMA AND TO STUDY ITS GROSS FLOW CHARACTERISTICS. THE PLANNED MONITORING OF THE INTERPLANETARY MEDIUM WAS NOT ACCOMPLISHED BECAUSE THE APOGEE THAT THE SATELLITE ACHIEVED WAS LOWER THAN EXPECTED. PROTONS WERE ANALYZED IN 12 ENERGY CHANNELS BETWEEN 0.7 AND 8 KEV. THE INSTRUMENT WAS MOUNTED ON THE SATELLITE EQUATORIAL PLANE AND HAD A VIEW ANGLE OF 15 DEG IN THIS PLANE AND OF 90 DEG IN THE PLANE CONTAINING THE SPIN AXIS. THE SATELLITE EQUATORIAL PLANE WAS DIVIDED INTO THREE CONTIGUOUS SECTORS (61 DEG, 55 DEG, AND 204 DEG) BY USE OF AN OPTICAL ASPECT SENSOR. THE PEAK FLUX IN ONE SECTOR WAS RECORDED AT ONE ANALYZER PLATE POTENTIAL PER REVOLUTION OF THE SATELLITE. (NO INFORMATION AS TO THE POSITION WITHIN THE SECTOR IN WHICH THE PEAK FLUX OCCURRED WAS RETAINED.) AFTER 12 REVOLUTIONS, ALL THE ENERGY CHANNELS HAD BEEN SCANNED, AND THE PROCESS WAS REPEATED FOR THE NEXT SECTOR. A COMPLETE SCAN IN ENERGY AND SECTOR WAS REPEATED EVERY 5.46 MIN. BECAUSE THE INSTRUMENT WAS NOT CAPABLE OF OBSERVING MAGNETOSPHERIC PLASMA, NO DATA WERE OBTAINED FOR THE TIME WHEN THE SATELLITE WAS IN THE MAGNETOSPHERE. THE INSTRUMENT OPERATED WELL DURING THE TIME WHEN DATA COULD BE RECORDED.

**DATA SET NAME-** PLOTS OF COLLECTOR CURRENT VS TIME FOR  
ALL ENERGY LEVELS ON MICROFILM

**NSSDC ID** 64-060A-06A

**AVAILABILITY OF DATA SET-** DATA AT NSSDC BEING PROCESSED

**TIME SPAN OF DATA-** 10/05/64 TO 12/23/64

**DATA SET BRIEF DESCRIPTION**

THESE REDUCED DATA CONSIST OF SEMILOG PLOTS OF THE PEAK COLLECTOR PLATE

CURRENT VS TIME FOR EACH ENERGY CHANNEL AND FOR EACH SECTOR. THESE PLOTS WERE SUPPLIED BY THE EXPERIMENTER AND MICROFILMED BY NSSDC. POSITIONS OF SATELLITE PERIGEE ARE MARKED. THE ORBIT NUMBER IS INCLUDED ON EACH PLOT. INDIVIDUAL PLOTS COVER ONE ORBIT. THE DATA ARE ON ONE REEL OF 35-MM MICROFILM AND COVER THE TIME PERIODS OCTOBER 5 TO DECEMBER 4, 1964, AND DECEMBER 9 TO DECEMBER 23, 1964. THESE CORRESPOND TO ORBITS 1 TO 43 AND 46 TO 57, WITH A 90 PERCENT COVERAGE FOR ALL ORBITS. THE LOCAL TIME OF APOGEE VARIES FROM NOON AT THE START OF THE DATA COVERAGE TO JUST BEFORE THE DAWN MERIDIAN AT THE END OF THE DATA COVERAGE.

EXPERIMENT NAME- FARADAY CUP

NSSDC ID 64-060A-07

ORIGINAL EXPERIMENT INSTITUTION- MIT

INVESTIGATORS- H.S. BRIDGE, MIT, CAMBRIDGE, MASS.  
J.H. BINSACK, MIT, CAMBRIDGE, MASS.

DATE LAST USEFUL DATA RECORDED- 10/13/65

#### EXPERIMENT BRIEF DESCRIPTION

THE FIVE-ELEMENT FARADAY CUP ON EXPLORER 21 MEASURED ELECTRONS BETWEEN 130 AND 265 EV AND IONS IN THE FOLLOWING FIVE ENERGY WINDOWS -- 40 TO 90, 95 TO 230, 260 TO 650, 700 TO 2000, AND 1700 TO 5400 EV. FOR EACH 5.46 MIN INTERVAL, 22 USABLE, INSTANTANEOUS CURRENT SAMPLES WERE RECORDED FOR EACH ENERGY WINDOW, SEPARATED BY .16 SEC EACH. TWO COLLECTOR PLATES WERE USED TO YIELD INFORMATION ABOUT THE ANGULAR VARIATION OUT OF THE SATELLITE SPIN PLANE. THE SUM AND DIFFERENCE OF THE CURRENTS ON THE TWO PLATES AND THE DIRECTION WITH MAXIMUM CURRENT WERE TELEMETERED. THE EFFECT OF SECONDARY ELECTRONS HAS NOT BEEN ELIMINATED. THIS EFFECT COULD BE VERY SIGNIFICANT WITHIN THE EARTH'S PLASMAPAUSE. THE INSTRUMENT PRODUCED DATA THROUGHOUT THE OPERATIONAL LIFE OF THE SPACECRAFT.

DATA SET NAME- REDUCED PLASMA MEASUREMENTS ON MAGNETIC  
TAPE

NSSDC ID 64-060A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/11/64 TO 09/24/65

#### DATA SET BRIEF DESCRIPTION

ALL AVAILABLE MEASUREMENTS MADE BY THE MIT EXPERIMENT HAVE BEEN CONVERTED BY THE EXPERIMENTER TO WHAT CAN BEST BE DESCRIBED AS 'ENGINEERING' UNITS. THIS PROCESS HAS TAKEN INTO ACCOUNT THE INSTRUMENT'S NONLINEAR TEMPERATURE-DEPENDENT TRANSFER FUNCTION, AND THE DATA HAVE BEEN CONVERTED TO FLUXES OF CHARGED PARTICLES IN TERMS OF MEASURED CURRENT (IN AMPS) WITHIN A SPECIFIED ENERGY WINDOW. THE SAMPLES IN EACH ENERGY WINDOW ARE PRESENTED IN THE SEQUENCE TAKEN, AS FUNCTIONS OF TIME. THE DATA ARE ON FOUR 800-BPI, 7-TRACK, FORTRAN IV MAGNETIC TAPES PRODUCED ON AN IBM 360 IN BCD

MODE.

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SPACECRAFT NAME- EXPLORER 22  
CTHER NAMES- BE-B, S 66A, 1564-064A  
NSSDC ID 64-064A  
LAUNCH DATE- 10/10/64 DATE LAST SCIENTIFIC DATA RECORDED- 02/00/70  
AGENCY- NASA SPACECRAFT WEIGHT IN ORBIT- 52.0 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 10/10/64 ORBIT PERIOD- 105 MIN.  
APOGEE- 1077. KM ALT PERIGEE- 874. KM ALT INCLINATION- 79.693 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 22 WAS A SMALL IONOSPHERIC RESEARCH SATELLITE INSTRUMENTED WITH AN ELECTROSTATIC PROBE, A 20-, 40-, AND 41-HZ RADIO BEACON, AND A PASSIVE LASER TRACKING REFLECTOR. ITS OBJECTIVE WAS TO OBTAIN WORLDWIDE OBSERVATIONS OF TOTAL ELECTRON CONTENT BETWEEN THE SPACECRAFT AND THE EARTH. THE SATELLITE WAS INITIALLY SPIN STABILIZED, BUT IT WAS DESPUN AFTER SOLAR PADDLE ERECTION. SUBSEQUENT STABILIZATION ORIENTED THE SATELLITE AXIS SYMMETRY WITH THE LOCAL MAGNETIC FIELD BY MEANS OF A STRONG BAR MAGNET AND DAMPING RODS. A THREE-AXIS MAGNETOMETER AND SUN SENSORS PROVIDED INFORMATION ON THE SATELLITE ATTITUDE AND SPIN RATE. THERE WAS NO TAPE RECORDER ABOARD, SO THAT SATELLITE PERFORMANCE DATA AND ELECTROSTATIC PROBE DATA COULD BE OBSERVED ONLY WHEN THE SATELLITE WAS WITHIN RANGE OF A GROUND TELEMETRY STATION. CONTINUOUS TRANSMITTERS OPERATED AT 162 AND 324 HZ TO PERMIT PRECISE TRACKING BY 'TRANSIT' TRACKING STATIONS FOR NAVIGATION AND GEODETIC STUDIES. IN AUGUST 1968, DATA ACQUISITION FROM THE SATELLITE TELEMETRY CHANNELS WAS DISCONTINUED. IN JULY 1969, TRACKING AND WORLD MAP PRODUCTION WAS DISCONTINUED BY GSFC. WORLD MAP PRODUCTION BASED ON NORAD ORBIT ELEMENTS WAS SUBSEQUENTLY ASSUMED BY ESRO IN ORDER TO SUPPORT SCIENTIFIC USE OF THE RADIO BEACON FOR IONOSPHERIC STUDY. IN FEBRUARY 1970, THE SATELLITE BATTERIES FAILED AND THE BEACON CEASED TO OPERATE.

EXPERIMENT NAME- LANGMUIR PROBE  
NSSDC ID 64-064A-02  
ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC  
INVESTIGATORS- L.H. BRACE, NASA-GSFC, GREENBELT, MD.  
DATE LAST USEFUL DATA RECORDED- 08/--/68

EXPERIMENT BRIEF DESCRIPTION

TWO CYLINDRICAL ELECTROSTATIC PROBES (TYPES OF LANGMUIR PROBES) WERE USED TO MEASURE ELECTRON DENSITY AND TEMPERATURE. EACH CONSISTED OF A COLLECTOR ELECTRODE WHICH EXTENDED FROM THE CENTRAL AXIS OF A CYLINDRICAL GUARD RING. THE GUARD RING EXTENDED 12.7 CM FROM THE SPACECRAFT, AND THE PROBE EXTENDED

22.86 CM. A 2-HZ SAWTOOTH VOLTAGE OF -3 TO +5 V WAS SWEEPED ALTERNATELY TO EACH OF THE PROBES. AND THE RESULTING CURRENT PROFILE TO THE PROBE WAS TELEMETERED. FROM THIS PROFILE, THE ELECTRON DENSITY AND TEMPERATURE AND MEAN ION MASS COULD BE DETERMINED. THE EXPERIMENT WAS OPERATED FOR 22 SEC EVERY 3 MIN WHILE WITHIN RANGE OF ANY OF 10 TELEMETRY STATIONS. THIS EXPERIMENT PERFORMED NOMINALLY FROM LAUNCH UNTIL AUGUST 1968, WHEN IT WAS TURNED OFF. ALTHOUGH THE EXPERIMENT HAS NOT SINCE BEEN CHECKED, IT IS STILL PRESUMED TO BE IN OPERATING CONDITION. ONLY A VERY LIMITED AMOUNT OF DATA FROM THIS EXPERIMENT IS AVAILABLE AT THE PRESENT TIME. A LARGE AMOUNT OF DATA IS EXPECTED WHEN DATA REDUCTION IS COMPLETED.

DATA SET NAME- TABULATIONS OF ELECTRON DENSITY DATA ON  
MICROFILM

NSSDC ID 64-064A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/10/64 TO 05/31/65

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET, WHICH WAS RECEIVED FROM THE EXPERIMENTER, CONSISTS OF ELECTRON NUMBER DENSITIES RECORDED BY STADAN STATIONS FOR PERIODS IN WHICH THE SATELLITE ORBIT PATH WAS OVER ANY ONE OF 10 STATIONS OBSERVING THE IONOSPHERIC BEACON FROM THIS SATELLITE. KNOWLEDGE OF THE ELECTRON DENSITY AT THE SATELLITE IS VERY USEFUL FOR INTERPRETATION OF BEACON DATA. THE EXPERIMENT OPERATED FOR 22 SEC EVERY 3 MIN. THE TWO 22-SEC PERIODS OCCURRING NEAREST A GIVEN BEACON OBSERVING STATION WERE ANALYZED FOR ELECTRON DENSITY. THE RESULTS ARE PRESENTED IN TABULAR FORM ON ONE REEL OF 35-MM MICROFILM ALONG WITH UT, LATITUDE, LONGITUDE, AND ALTITUDE. THE DATA FROM EACH MONTH ARE ORDERED ACCORDING TO THE BEACON STATION OVER WHICH THE DATA WERE RECORDED.

DATA SET NAME- TABULATIONS OF ELECTRON DENSITY ON  
COMPUTER PRINTOUT

NSSDC ID 64-064A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/10/64 TO 05/31/65

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET, WHICH WAS RECEIVED FROM THE EXPERIMENTER, CONSISTS OF ELECTRON NUMBER DENSITIES RECORDED BY STADAN STATIONS FOR PERIODS IN WHICH THE SATELLITE ORBIT PATH WAS OVER ANY ONE OF 10 STATIONS OBSERVING THE IONOSPHERIC BEACON FROM THIS SATELLITE. KNOWLEDGE OF THE ELECTRON DENSITY AT THE SATELLITE IS VERY USEFUL FOR INTERPRETATION OF BEACON DATA. THE EXPERIMENT OPERATED FOR 22 SEC EVERY 3 MIN. THE TWO 22-SEC PERIODS OCCURRING NEAREST A GIVEN BEACON OBSERVING STATION WERE ANALYZED FOR ELECTRON DENSITY. THE RESULTS ARE PRESENTED IN TABULAR FORM ON 174 PAGES OF COMPUTER PRINTOUT ALONG WITH UT, LATITUDE, LONGITUDE, AND ALTITUDE. THE DATA FROM EACH MONTH ARE ORDERED ACCORDING TO THE BEACON STATION OVER WHICH THE DATA WERE RECORDED. THE SAME DATA ARE AVAILABLE ON MICROFILM AS DATA

SET 64-064A-02A.

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SPACECRAFT NAME- COSMOS 49  
OTHER NAMES- 1564-069A

NSSDC ID 64-069A

LAUNCH DATE- 10/24/64 DATE LAST SCIENTIFIC DATA RECORDED- 11/06/64

AGENCY- USSR SPACECRAFT WEIGHT IN ORBIT- 400 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 10/24/64 ORBIT PERIOD- 91.78 MIN.  
APOGEE- 466. KM ALT PERIGEE- 264. KM ALT INCLINATION- 48.99 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

COSMOS 49 WAS INSTRUMENTED WITH PROTON MAGNETOMETERS TO MAP THE EARTH'S MAGNETIC FIELD. THIS SPACECRAFT, ALONG WITH COSMOS 26, REPRESENTED THE U.S.S.R. CONTRIBUTION TO THE IQSY WORLD MAGNETIC SURVEY. THE CORRESPONDING U.S. MEASUREMENTS WERE PERFORMED ON OGO 2 AND OGO 4. COSMOS 49 WAS AN ELLIPSOID ABOUT 1.8 M LONG AND 1.2 M IN DIAMETER. IT APPEARS TO HAVE BEEN BATTERY POWERED FOR ABOUT 30 DAYS OF OPERATION. A BOOM 3.3 M LONG WAS ATTACHED TO ONE END OF THE SPACECRAFT TO CARRY THE MAGNETOMETERS. THE PERFORMANCE OF THE SPACECRAFT WAS SATISFACTORY.

EXPERIMENT NAME- PROTON PRECESSIONAL MAGNETOMETERS

NSSDC ID 64-069A-01

ORIGINAL EXPERIMENT INSTITUTION- USSR-IZMIRAN

INVESTIGATORS- SH.SH. DOLGINOV, USSR-IZMIRAN ,  
P-O AKADEMGORODOK, MOSCOW REGION, USSR  
V.I. NALIVAYKO, USSR-IZMIRAN ,  
P-O AKADEMGORODOK, MOSCOW REGION, USSR

DATE LAST USEFUL DATA RECORDED- 11/06/64

#### EXPERIMENT BRIEF DESCRIPTION

THE COSMOS 49 SPACECRAFT CARRIED TWO PROTON MAGNETOMETERS WITH THE AXES OF THEIR POLARIZE-SENSE COILS ORIENTED AT AN ANGLE OF 90 DEG TO EACH OTHER. AN ONBOARD TIMER TURNED ON THE TWO MAGNETOMETERS ALTERNATELY, AND ONE OR THE OTHER WAS SAMPLED ONCE EVERY 32.76 SEC. THE MAGNETOMETER SIGNALS WERE DIGITIZED BY MEASURING THE NUMBER OF CYCLES FROM A 100-KHZ REFERENCE QUARTZ OSCILLATOR WHICH OCCURRED DURING 512 CYCLES OF THE PROTON PRECESSION SIGNAL. THE MEASURED SCALAR TOTAL FIELD VALUES ALONG WITH TIME SIGNALS WERE STORED IN A MEMORY DEVICE WHICH COULD HOLD UP TO 800 MIN OF DATA. THE DATA WERE THEN READ OUT AS THE SPACECRAFT FLEW OVER THE RECEIVING STATIONS. THE EXPERIMENT PERFORMED SATISFACTORILY, AND THE REPORTED ACCURACY OF THE DATA IS WITHIN 2 GAMMAS.



DATA SET NAME- REDUCED SCALAR MAGNETIC FIELD DATA  
TABLES ON MICROFILM

NSSDC ID 64-069A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/24/64 TO 11/03/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF ORIGINAL REDUCED SCALAR MAGNETIC FIELD DATA AND DOCUMENTATION AS RECEIVED FROM WDC-81, MOSCOW, ALONG WITH AN ENGLISH TRANSLATION OF THE DOCUMENTATION, ALL ON ONE REEL OF 35-MM MICROFILM. THE DATA CONSIST OF 17,489 FIELD MEASUREMENTS WITH THE FOLLOWING PARAMETERS FOR EACH MEASUREMENT -- (1) MAGNETOMETER NUMBER (1 OR 2), (2) MEASUREMENT NUMBER, (3) MOSCOW TIME (UT PLUS 3 HR) OF MEASUREMENT TO THE MINUTE, (4) SATELLITE ALTITUDE (TO A TENTH OF A KM) RELATIVE TO A GIVEN BIAXIAL ELLIPSOID, (5, 6) GEOGRAPHIC LATITUDE AND LONGITUDE TO ONE HUNDREDTH OF A DEGREE, (7) THE MEASURED FIELD INTENSITY IN GAMMAS, (8) THE COMPUTED FIELD INTENSITY FOR A GIVEN MODEL, AND (9) THE DIFFERENCE BETWEEN THE MEASURED AND COMPUTED FIELDS. THE DATA ARE CONTAINED IN TABLES IN THREE UNPUBLISHED REPORTS, THE FIRST OF WHICH CONTAINS TEXT DESCRIBING THE MEASUREMENTS, THEIR PROCESSING, CERTAIN RESULTS, AND THE CONTENT OF THE DATA TABLES. THE MEASUREMENTS ARE SCATTERED RATHER UNIFORMLY -- (1) IN TIME FROM OCTOBER 24 TO NOVEMBER 3, 1964, (2) IN LATITUDE FROM +49 DEG TO -49 DEG, (3) IN LONGITUDE, AND (4) IN ALTITUDE FROM 260 KM TO 436 KM. FALSE READINGS WHICH OCCURRED IN CASES OF UNFAVORABLE POSITIONS OF EITHER TRANSDUCER AXIS RELATIVE TO THE FIELD HAVE BEEN REMOVED. THE MICROFILM CONTAINS 360 MEASUREMENTS FROM ONE MAGNETOMETER ORDERED BY TIME, AND THEN 360 MEASUREMENTS FROM THE OTHER MAGNETOMETER, ETC.

DATA SET NAME- REDUCED SCALAR MAGNETIC FIELD DATA  
TABLES ON MAGNETIC TAPE

NSSDC ID 64-069A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/24/64 TO 11/03/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF REDUCED SCALAR MAGNETIC FIELD DATA ON AN IBM 7054, 7-TRACK, BINARY MAGNETIC TAPE, WITH ODD PARITY AT 556 BPI, COPIED FROM THE ORIGINAL DATA SET (64-069A-01A). THE TAPE WAS PRODUCED BY DR. J. C. CAIN AND CO-WORKERS AT GODDARD SPACE FLIGHT CENTER. EACH PHYSICAL RECORD CONTAINS 240 DATA WORDS PLUS ONE FORTRAN CONTROL WORD. EACH PHYSICAL RECORD CONTAINS 20 LOGICAL RECORDS. EACH LOGICAL RECORD CONSISTS OF THE 12 FLOATING POINT NUMBERS CHARACTERIZING ONE FIELD MEASUREMENT. THE PARAMETERS IN EACH LOGICAL RECORD ARE -- MAGNETOMETER NUMBER, DAY OF MONTH, MONTH, MEASUREMENT NUMBER, HOUR, MINUTE (DATE AND TIME IN UT), ALTITUDE (KM), LATITUDE (DEG), LONGITUDE, MEASURED FIELD (GAMMAS), COMPUTED FIELD FOR GSFC COSMOS 49 MODEL, AND THE DIFFERENCE BETWEEN THE MEASURED AND COMPUTED FIELDS. THE DATA ARE TIME ORDERED.

DATA SET NAME- COMPRESSED REDUCED SCALAR MAGNETIC FIELD  
DATA TABLES ON MAGNETIC TAPE

NSSDC ID 64-069A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/24/64 TO 11/03/64

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF REDUCED SCALAR MAGNETIC FIELD DATA ON 7-TRACK BCD MAGNETIC TAPE, WITH EVEN PARITY AT 556 BPI, COPIED AT NSSDC FROM THE BINARY TAPE OF DATA SET 64-069A-01B, WHICH IS A COPY OF THE DATA ON MICROFILM IN DATA SET 64-069A-01A. EACH PHYSICAL RECORD CONTAINS 1380 CHARACTERS, COMPRISING 20 LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS 69 CHARACTERS REPRESENTING 12 FLOATING POINT NUMBERS WHICH CHARACTERIZE ONE FIELD MEASUREMENT. THE PARAMETERS GIVEN FOR EACH MEASUREMENT ARE AS FOLLOWS -- MAGNETOMETER NUMBER, DAY OF MONTH, MONTH, MEASUREMENT NUMBER, HOUR, MINUTE (DATE AND TIME IN UT), ALTITUDE (KM), LATITUDE (DEG), LONGITUDE, MEASURED FIELD (GAMMAS), COMPUTED FIELD FOR GSFC COSMOS 49 MODEL, AND THE DIFFERENCE BETWEEN THE MEASURED AND COMPUTED FIELDS. THE DATA ARE TIME ORDERED.

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SPACECRAFT NAME- EXPLORER 23  
OTHER NAMES- S 55C, 1964-074A

NSSDC ID 64-074A

LAUNCH DATE- 11/06/64

DATE LAST SCIENTIFIC DATA RECORDED- 11/07/65

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

134 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 10/11/65 ORBIT PERIOD- 99.13 MIN.

APOGEE- 975. KM ALT

PERIGEE- 464. KM ALT INCLINATION- 51.95 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE EXPLORER 23 MICROMETEOROID SATELLITE WAS THE THIRD IN THE SERIES OF 55 MICROMETEOROID SATELLITES ORBITED BY NASA. ITS PURPOSE WAS TO OBTAIN DATA ON THE NEAR-EARTH METEOROID ENVIRONMENT, THUS PROVIDING AN ACCURATE ESTIMATE OF THE PROBABILITY OF PENETRATION IN SPACECRAFT STRUCTURES BY METEORIDS AND ALLOWING A MORE CONFIDENT DEFINITION OF THE PENETRATION FLUX-MATERIAL THICKNESS RELATION TO BE DERIVED. THE CYLINDRICALLY SHAPED SPACECRAFT, ABOUT 61 CM IN DIAMETER AND 234 CM LONG, WAS BUILT AROUND THE BURNED OUT FOURTH STAGE OF THE SCOUT LAUNCH VEHICLE, WHICH REMAINED AS PART OF THE ORBITING SATELLITE. EXPLORER 23 CARRIED STAINLESS STEEL PRESSURIZED-CELL PENETRATION DETECTORS, IMPACT DETECTORS, AND CADMIUM SULFIDE CELL DETECTORS TO OBTAIN DATA ON THE SIZE, NUMBER, DISTRIBUTION, AND MOMENTUM OF DUST PARTICLES IN THE NEAR-EARTH ENVIRONMENT. IN ADDITION, THE SPACECRAFT WAS DESIGNED TO PROVIDE DATA ON THE EFFECTS OF THE SPACE ENVIRONMENT ON THE OPERATION OF CAPACITOR PENETRATION DETECTORS AND SOLAR CELL POWER SUPPLIES. THE SPACECRAFT MASS, NEGLECTING THE FOURTH STAGE

VEHICLE HARDWARE AND MOTOR, WAS 96.4 KG. THE SPACECRAFT OPERATED SATISFACTORILY DURING ITS 1-YR LIFE (NOVEMBER 6, 1964, THROUGH NOVEMBER 7, 1965), AND ALL MISSION OBJECTIVES WERE ACCOMPLISHED EXCEPT FOR THE CADMIUM SULFIDE CELL DETECTOR EXPERIMENT, WHICH WAS DAMAGED ON LIFTOFF AND PROVIDED NO DATA.

EXPERIMENT NAME- PRESSURIZED CELLS

NSSDC ID 64-074A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- C.A. GURTLER, NASA-LARC , HAMPTON, VA.  
G.W. GREEN, NASA-LARC , HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 11/07/65

#### EXPERIMENT BRIEF DESCRIPTION

THE FREQUENCY AT WHICH TWO DIFFERENT THICKNESSES OF STAINLESS STEEL WERE PUNCTURED IN SPACE WAS OBTAINED BY USE OF 216 STAINLESS STEEL CELLS WITH A THICKNESS OF  $9.87 \times 10^{-3}$  CM. THE CELLS WERE PRESSURIZED WITH HELIUM (ABSOLUTE PRESSURE OF 1300 MM HG) AND MOUNTED IN SEVEN ROWS AROUND THE PERIPHERY OF THE SPACECRAFT. THE TEST MATERIAL WAS HALF-HARD TYPE 302 STAINLESS STEEL COATED WITH A 1.4-MICRON-THICK THERMAL BALANCE COVER CONSISTING OF SUCCESSIVE LAYERS OF CHROMIUM, SILICON MONOXIDE, ALUMINUM, AND SILICON MONOXIDE. OF THE 210 ACTIVE CELLS (SIX CELLS WERE INACTIVE DUE TO TELEMETRY LIMITATIONS), 70 HAD  $25.4 \pm 2.5$ -MICRON-THICK TEST MATERIAL AND 140 HAD  $50.8 \pm 2.5$ -MICRON-THICK TEST MATERIAL. THE TOTAL EXPOSED AREA FOR EACH CLASS OF DETECTOR WAS  $0.69 \text{ m}^2$  TO THE  $2^{-2}$  POWER AND  $1.38 \text{ m}^2$  TO THE  $2^{-1}$  POWER, RESPECTIVELY. WHEN A CELL WAS PUNCTURED, THE GAS LEAKED OUT, AND THE DROP IN PRESSURE CAUSED A SWITCH TO OPEN INDICATING THAT A PUNCTURE HAD OCCURRED. THE FREQUENCY AT WHICH CELLS LOST PRESSURE WAS A DIRECT MEASURE OF THE FREQUENCY AT WHICH THE TEST MATERIAL WAS BEING PUNCTURED BY METEORIODS. THE CELLS, HOWEVER, COULD NOT DETECT ANY ADDITIONAL PUNCTURES BUT DID PROVIDE A PERMANENT RECORD OF THE INITIAL PUNCTURE. THE EXPERIMENT OPERATED SATISFACTORILY DURING ITS 365-DAY LIFE, RECORDING 50 PUNCTURES OF THE 25-MICRON CELLS AND 74 PUNCTURES OF THE 50-MICRON CELLS. THE DATA OBTAINED ARE IN GOOD AGREEMENT WITH PUNCTURE RATES OBTAINED IN PREVIOUS SATELLITE EXPERIMENTS.

DATA SET NAME- ANALYZED DATA PUBLISHED IN NASA TN-D-4284

NSSDC ID 64-074A-01A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/06/64 TO 11/05/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET IS CONTAINED IN THE PUBLISHED REPORT "THE EXPLORER XXIII

MICROMETEOROID SATELLITE. DESCRIPTION AND RESULTS FOR THE PERIOD NOVEMBER 6, 1964, THROUGH NOVEMBER 5, 1965,\* COMPILED BY R. L. C'NEAL, NASA TN-D-4284, 9-29, JUNE 1968. ACCUMULATED PUNCTURES FOR THE 25-MICRON-THICK PRESSURIZED CUP DETECTORS ARE GIVEN IN A TIME-ORDERED TABULATED FORM (FOUR PAGES) INCLUDING THE PASS NUMBER, GREENWICH DATE, GREENWICH MEAN TIME AT INTERROGATION, AND TIME SINCE LAST INTERROGATION IN HOURS AND MINUTES. ALSO INCLUDED IN THE REPORT ARE THE TIME-AREA PRODUCTS AND PUNCTURE RATES FOR BOTH DETECTORS AS DERIVED FROM THE PUNCTURE DATA. THE ANALYZED DATA CONSIST OF SIX GRAPHS DEPICTING THE FOLLOWING RELATIONS -(1) A COMPARISON OF PUNCTURE HISTORY WITH AVERAGE PUNCTURE CURVE FOR THE 25-MICRON DETECTOR WITH ONE-STANDARD DEVIATION BOUNDARIES NOTED, (2) SAME AS (1) BUT FOR THE 50-MICRON DETECTOR, (3) A HISTORY OF PUNCTURES FOR THE 25-MICRON DETECTOR AS A FUNCTION OF THE TIME-AREA IN WHICH SLOPES ARE DRAWN THROUGH GROUPS OF DATA POINTS INDICATING POSSIBLE CHANGES IN METEOROID FLUX RATES, (4) A COMPARISON OF OBSERVED AND EXPECTED VALUES OF THE NUMBER OF PUNCTURES FOR THE 25-MICRON DETECTOR WHOSE TIME-AREA PRODUCTS BETWEEN PUNCTURES FALL WITHIN THE TIME-AREA CLASSIFICATIONS SHOWN, (5) SAME AS (4) BUT FOR THE 50-MICRON DETECTOR, AND (6) A COMPARISON OF EXPLORER 16 AND EXPLORER 23 PRESSURIZED-CELL PUNCTURE RATES. THE DATA CONSIST OF 124 COUNTS, ARE OF GOOD QUALITY, AND ARE IN REASONABLE AGREEMENT WITH DATA OBTAINED FROM SIMILAR EXPERIMENTS FLOWN ON EARLIER SATELLITES.

EXPERIMENT NAME- IMPACT DETECTORS

NSSDC ID 64-074A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- D.G. HOLDEN, NASA-LARC , HAMPTON, VA.  
A.G. BESWICK, NASA-LARC , HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 11/05/65

#### EXPERIMENT BRIEF DESCRIPTION

THE MASS DISTRIBUTION OF METEORIODS IN SPACE WAS DETERMINED BY AN IMPACT-DETECTION SYSTEM CONSISTING OF 24 TRIANGULAR 0.13-CM-THICK 6061 ALUMINUM ALLOY SOUNDING BOARDS. EACH HAD AN EFFECTIVE AREA OF 6.0 TIMES 10 TO THE MINUS 3 POWER (OR METERS TO THE 2 POWER) AND LEAD-ZIRCONATE-TITANATE PIEZOELECTRIC TRANSDUCERS MOUNTED ON THE CENTER OF THE SOUNDING BOARD UNDERSIDE. FOUR GROUPS OF SIX ELECTRICALLY PARALLEL SOUNDING BOARDS WERE MOUNTED AROUND THE PERIPHERY OF THE SPACECRAFT. WHEN A METEOROID IMPACTED ON A SOUNDING BOARD, AN ELECTRICAL SIGNAL WAS PRODUCED FROM THE TRANSDUCER, THEN AMPLIFIED, THRESHOLD DETECTED, COUNTED, AND STORED UNTIL READOUT. THE AMPLIFIER FOR EACH GROUP HAD THREE STAGES OF AMPLIFICATION, WHICH CORRESPONDED TO THREE LEVELS OF MOMENTUM -- LOW, MEDIUM, AND HIGH. BY ASSIGNING A VELOCITY TO THE PARTICLES IMPACTING ON THE SOUNDING BOARDS IN SPACE, THE SYSTEM OUTPUT WAS DIRECTLY RELATED TO THE THRESHOLD LEVELS OF PARTICLE MASS. THE SYSTEM SENSITIVITY WAS ADJUSTED DURING FINAL CALIBRATIONS SO THAT ALL 24 SOUNDING BOARDS ACTED AS A SINGLE DETECTOR FOR ALL THREE SENSITIVITY LEVELS. THE MOMENTUM THRESHOLDS OBTAINED BY CALIBRATION FOR THE LOW, MEDIUM, AND HIGH RANGES WERE 1.2 TIMES 10 TO THE MINUS 4 POWER, 8.0 TIMES 10 TO THE MINUS 6 POWER, AND 3.0 TIMES 10 TO THE MINUS 7 POWER NEWTON-SECOND, RESPECTIVELY. THE DATA OBTAINED SHOWED 14,169

COUNTS, 218 COUNTS, AND 2 COUNTS FOR THE HIGH-, MEDIUM-, AND LOW-SENSITIVITY SYSTEMS, RESPECTIVELY, OVER A 1-YR PERIOD (NOVEMBER 6, 1964, TO NOVEMBER 5, 1965).

DATA SET NAME- ANALYZED DATA PUBLISHED IN NASA TN-D-4284 NSSDC ID 64-074A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/06/64 TO 11/05/65

DATA SET BRIEF DESCRIPTION

THE DATA SET IS CONTAINED IN THE PUBLISHED REPORT 'THE EXPLORER XXIII MICROMETEOROID SATELLITE. DESCRIPTION AND RESULTS FOR THE PERIOD NOVEMBER 6, 1964, THROUGH NOVEMBER 5, 1965,' COMPILED BY R. L. C'NEAL, NASA TN D-4284, 45-57, JUNE 1968. THE TOTAL NUMBER OF COUNTS FOR EACH SENSITIVITY RANGE (LOW, MEDIUM, AND HIGH) IS GIVEN IN THE TEXT AS ARE FOUR FIGURES DESCRIBING THE IMPACT DETECTOR CONFIGURATION. FOUR FIGURES IN THE REPORT DISPLAY THE DATA IN THE FOLLOWING WAYS -- THE DAILY IMPACT ACCUMULATION FOR THE HIGH- AND MEDIUM-SENSITIVITY RANGES PLOTTED VS TIME (UT), A COMPARISON OF IMPACT DATA FROM EXPLORER 8, EXPLORER 16, AND EXPLORER 23 PLOTTED ON AN IMPACT RATE VS PARTICLE MASS COORDINATE SYSTEM, AND THE PREDICTED TIME IN SUNLIGHT FOR EXPLORER 23 COMPARED WITH THE HIGH-SENSITIVITY RANGE DAILY IMPACT ACCUMULATION. THE QUALITY OF THE DATA IS QUESTIONABLE IN ALL SENSITIVITY RANGES. THE HIGH-SENSITIVITY RANGE DATA CONTAINED FALSE IMPACT COUNTS DUE TO SENSOR TEMPERATURE EFFECTS AND DO NOT COMPARE WELL WITH PENETRATION DATA. THE MEDIUM-RANGE DATA WERE NOT TEMPERATURE SENSITIVE BUT STILL COULD NOT BE INTERPRETED WITH ANY CERTAINTY. THE LOW-SENSITIVITY DATA WERE TOO SPARSE TO BE STATISTICALLY SIGNIFICANT.

EXPERIMENT NAME- CAPACITOR DETECTORS

NSSDC ID 64-074A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- J.H. SIVITER, NASA-LARC, HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 11/05/65

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE EXPERIMENT WAS TO DETERMINE WHETHER THE SPACE RADIATION ENVIRONMENT HAD ANY ADVERSE EFFECTS ON THE OPERATION OF THE CAPACITOR AS A METEOROID-PENETRATION DETECTOR. OBSERVATIONS IN THE LABORATORY INDICATED THAT ENERGETIC ELECTRONS IN SPACE MIGHT COLLECT IN THE DIELECTRIC AND PRODUCE SPURIOUS, FALSE PENETRATION COUNTS. THE INSTRUMENTATION CONSISTED ESSENTIALLY OF TWO CAPACITORS MADE UP OF A THIN FILM POLYMER DIELECTRIC (BILAMINATE 3.8 MICRON THICK, HALF HARD, TYPE 302), WHICH SERVED AS ONE ELECTRODE. ABOUT A 0.65-MICRON THICKNESS OF COPPER WAS VACUUM-DEPOSITED ON THE OUTER SURFACE OF THE DIELECTRIC, THUS PERMITTING IT TO SERVE AS THE SECOND ELECTRODE. THE CAPACITORS WERE EACH MOUNTED ON A 0.63-CM-THICK LAYER

OF POLYURETHANE FOAM SUPPORT BY MEANS OF A 2.5-MICRON ADHESIVE. THE FOAM SUPPORT, IN TURN, WAS SEATED IN A LAMINATED FIBERGLASS TRAY WHICH SERVED AS THE MOUNTING FIXTURE. A PENETRATION INTO THE CHARGED CAPACITOR BY A PROJECTILE CAUSED THE CAPACITOR TO BE MOMENTARILY SHORTED AND DISCHARGED. THIS DISCHARGE WAS DETECTED AND STORED IN A COUNTER FOR LATER TRANSMISSION. THE CONDUCTION PATH DISSIPATED IN LESS THAN 1 MICROSEC AND ALLOWED THE CAPACITOR TO RECHARGE AND DETECT ANY ADDITIONAL PENETRATIONS. TWO DISCHARGES WERE RECORDED FOR ONE OF THE DETECTORS DURING THE 365-DAY LIFETIME OF THE EXPERIMENT (NOVEMBER 6, 1964, TO NOVEMBER 5, 1965). NO DISCHARGES WERE RECORDED FOR THE SECOND CAPACITOR. MORE REFINED LABORATORY TESTS, HOWEVER, REVEALED THAT THE NUMBER OF RADIATION-INDUCED PULSES WOULD BE ABOUT THE SAME AS OR LESS THAN THE NUMBER RESULTING FROM ACTUAL PUNCTURES, THUS MAKING IT DIFFICULT, IF NOT IMPOSSIBLE, TO DISTINGUISH BETWEEN THE TWO. HENCE, THE ORIGIN OF THE TWO COUNTS (ELECTRON OR METEOROID) COULD NOT BE DETERMINED. IT WAS DETERMINED FROM THE DATA, HOWEVER, THAT ANY RADIATION-INDUCED PULSES GREATER THAN 2 V WERE AT A MINIMUM AND WOULD NOT LIKELY AFFECT THE METEOROID FLUX DATA TO ANY GREAT EXTENT, PARTICULARLY WHEN THE PENETRATION RATES WERE RELATIVELY HIGH.

DATA SET NAME- ANALYZED DATA PUBLISHED IN NASA TN-D-4284      NSSDC ID 64-074A-04A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/06/64 TO 11/05/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET IS CONTAINED IN THE PUBLISHED REPORT 'THE EXPLORER XXIII MICROMETEOROID SATELLITE. DESCRIPTION AND RESULTS FOR THE PERIOD NOVEMBER 6, 1964, THROUGH NOVEMBER 5, 1965,' COMPILED BY R. L. C'NEAL, NASA TN-D-4284, 31-44, JUNE 1968. ONLY TWO COUNTS WERE RECORDED BY THE DETECTORS DURING THE 365-DAY LIFETIME OF THE EXPERIMENT. THE DATES AND TIMES OF THESE EVENTS ARE GIVEN IN THE TEXT. THE REST OF THE ARTICLE DESCRIBES THE EXPERIMENT, INSTRUMENT DESIGN AND OPERATION, CALIBRATION, AND THE ATTEMPTS TO DETERMINE IF THE COUNTS WERE DUE TO RADIATION OR METEOROID PENETRATION. ALSO INCLUDED ARE SIX FIGURES DEPICTING THE CAPACITOR DETECTOR CONFIGURATION, A TYPICAL CROSS SECTION OF THE DETECTOR, A PHOTOGRAPH OF THE DETECTOR, A BLOCK DIAGRAM OF DETECTOR CIRCUITRY, CALIBRATION CURVES OF THE CAPACITOR DETECTOR SIGNAL CONDITIONING UNITS, AND PHOTOGRAPHS OF TYPICAL OSCILLOSCOPE PATTERNS OF DETECTOR DISCHARGES CAUSED BY HYPERVELOCITY-PROJECTILE PENETRATION. BASED ON EVIDENCE OBTAINED IN LABORATORY TESTS, THE ORIGIN OF THE COUNTS COULD NOT BE DETERMINED BECAUSE THE NUMBER OF RADIATION-INDUCED PULSES WOULD BE ABOUT THE SAME AS OR LESS THAN NUMBER RESULTING FROM METEOROID PUNCTURES. THEREFORE, THE DATA ARE TOO SPARSE AND INCONCLUSIVE TO BE OF ANY SIGNIFICANCE.

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SPACECRAFT NAME- EXPLORER 25  
OTHER NAMES-      INJUN 4, 1964-6768

NSSDC ID 64-0768

LAUNCH DATE- 11/21/64

DATE LAST SCIENTIFIC DATA RECORDED- 07/19/66

AGENCY- IOWA-GSFC

SPACECRAFT WEIGHT IN ORBIT-

40. KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 11/21/64

ORBIT PERIOD- 116.3 MIN.

APOGEE- 2494. KM ALT

PERIGEE- 522. KM ALT

INCLINATION- 81.36 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

EXPLORER 25 WAS A MAGNETICALLY ALIGNED SATELLITE LAUNCHED SIMULTANEOUSLY WITH EXPLORER 24 (AIR DENSITY EXPERIMENT) USING A SINGLE SCOUT ROCKET. THE SATELLITE'S PRIMARY MISSION WAS TO MAKE MEASUREMENTS OF THE INFLUX OF ENERGETIC PARTICLES INTO THE EARTH'S ATMOSPHERE AND TO STUDY ATMOSPHERIC HEATING AND THE INCREASE IN SCALE HEIGHT WHICH HAVE BEEN CORRELATED WITH GEOMAGNETIC ACTIVITY. STUDIES OF THE NATURAL AND ARTIFICIAL TRAPPED RADIATION BELTS WERE ALSO CONDUCTED. A BIAXIAL FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. EXPLORER 25 WAS EQUIPPED WITH A TAPE RECORDER AND ANALOG-TO-DIGITAL CONVERTERS. THE SATELLITE POWER WAS DERIVED FROM RECHARGEABLE BATTERIES AND SOLAR CELLS. A TRANSMITTER OPERATING IN AN AM MODE AT CARRIER FREQUENCY 136.29 MHZ WAS USED TO TRANSMIT REAL-TIME DATA, AND ONE OPERATING IN A PM MODE AT 136.86 MHZ WAS USED TO TRANSMIT TAPE RECORDER DATA. STABLE MAGNETIC ALIGNMENT WAS NOT ACHIEVED UNTIL LATE FEBRUARY 1965. THE SATELLITE SENT RADIATION DATA UNTIL DECEMBER 1966 AND IS EXPECTED TO BE IN ORBIT FOR ABOUT 200 YR.

EXPERIMENT NAME- GEIGER-MUELLER COUNTER

NSSDC ID 64-0768-03

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA, IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 07/19/66

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED (1) TO MEASURE CORPUSCULAR ENERGY FLUXES INCLUDING STUDIES OF THE NET DOWN-FLUX OF PARTICLES FROM THE TRAPPING REGION AND STUDIES OF THE INTENSITIES OF GEOMAGNETICALLY TRAPPED PARTICLES AT LOW ALTITUDES OVER A WIDE RANGE OF LATITUDES AND LONGITUDES AND A LONG PERIOD OF TIME, (2) TO STUDY THE LONG-TERM DECAY OF ELECTRONS IN THE ARTIFICIALLY PRODUCED 'STARFISH' RADIATION BELT, AND (3) TO CARRY ON GENERAL TEMPORAL AND SPATIAL MONITORING OF THE NATURAL RADIATION ZONES AND THE INTENSITY OF GALACTIC COSMIC RAYS. FOUR EGN 6213 TYPE DIRECTIONAL GM COUNTERS WERE USED FOR ENERGY FLUX MEASUREMENTS. THESE COUNTERS WERE SENSITIVE TO ELECTRONS (E.GT. 40 KEV) AND PROTONS (E.GT. 600 KEV). THE DETECTORS WERE ARRANGED TO DETECT PARTICLES WITH PITCH ANGLES FROM 0 TO 180 DEG IN FOUR SEGMENTS CENTERED AT PITCH ANGLES OF 35, 90, 125, AND 160 DEG. ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE 6213 GM COUNTERS AT 35 AND 160 DEG FUNCTIONED NORMALLY THROUGHOUT THE FLIGHT, WHILE THE COUNTER AT 90 DEG OPERATED PROPERLY ONLY UNTIL ABOUT MID-MARCH 1965. PERIODS OF INTERMITTENT

OPERATION COMMENCED AT THAT TIME DUE TO CONTINUOUS DISCHARGE OF THE GM COUNTER, AND THE COUNTER FAILED COMPLETELY IN JUNE 1965. THE FOURTH COUNTER, AT 125 DEG, MALFUNCTIONED SHORTLY AFTER LAUNCH YIELDING NO USEFUL DATA. ONE HEAVILY SHIELDED OMNIDIRECTIONAL EON 6213 TYPE GM COUNTER WAS USED FOR THE STUDY OF THE STARFISH RADIATION. THIS COUNTER WAS SENSITIVE TO PROTONS (E.GT. 70 MEV) BUT INSENSITIVE TO ELECTRONS EXCEPT VIA BREMSSTRAHLUNG (E.GT. 1 MEV). ONE OMNIDIRECTIONAL 5112 TYPE GM COUNTER OF THE KIND FLOWN ON THE EXPLORER 7 SATELLITE AND ONE OMNIDIRECTIONAL 7302 TYPE GM COUNTER WERE USED FOR MONITORING THE NATURAL RADIATION ZONES AND COSMIC RAYS. THE 5112 GM COUNTER WAS SENSITIVE TO PROTONS (E.GT. 27 MEV) BUT INSENSITIVE TO ELECTRONS EXCEPT VIA BREMSSTRAHLUNG (E.GT. 1 MEV). THE FOUR DIRECTIONAL TYPE 6213 GM COUNTER ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 4 SEC, AND THE OTHER GM COUNTER ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 8 SEC.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, GM COUNTS

NSSDC ID 64-076B-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/13/65 TO 07/19/66

#### DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED '8-SEC AVERAGE' FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25 EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/80, VARIATION MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-076B-02A, -03A, -04A, -05A, AND -06A.

EXPERIMENT NAME- SOLID-STATE DETECTOR

NSSDC ID 64-076B-04

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA, IOWA CITY, IOWA  
S.M. KRIMIGIS, APPLIED PHYSICS LAB, SILVER SPRING, MD.

DATE LAST USEFUL DATA RECORDED- 07/19/66

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETECT PROTONS AND ALPHA PARTICLES IN THE OUTER ZONE AND IN SOLAR COSMIC-RAY EVENTS AT LOW ALTITUDES AND HIGH



LATITUDES. THE EXPERIMENT USED A TOTALLY DEPLETED DIRECTIONAL SILICON SURFACE BARRIER DETECTOR IN THE FORM OF A THIN CIRCULAR DISC. THE DETECTOR WAS LOCATED INSIDE A CONICAL COLLIMATOR WITH FULL VERTEX ANGLE OF 40 DEG AND WAS ORIENTED AT 90 DEG TO THE SATELLITE SYMMETRY AXIS. SEPARATE DETERMINATIONS OF PROTON AND ALPHA PARTICLE FLUXES WERE MADE IN THE ENERGY RANGE 0.52 TO 4 MEV/NUCLEON AND 0.9 TO 1.8 MEV/NUCLEON. THE DETECTOR WAS INSENSITIVE TO ELECTRON FLUXES IN THE RADIATION ZONES. THE DETECTOR ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 4 SEC, AND THE DETECTOR PERFORMED NORMALLY THROUGH JULY 19, 1966.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, P-N COUNTS      NSSDC ID 64-076B-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/13/65 TO 07/19/66

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED '8-SEC AVERAGE' FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25 EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/BO, VARIOUS MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-076B-02A, -03A, -04A, -05A, AND -06A.

EXPERIMENT NAME- CADMIUM SULFIDE DETECTORS

NSSDC ID 64-076B-05

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA, IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 07/19/66

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE CORPUSCULAR ENERGY FLUXES INCLUDING A STUDY OF THE NET DOWN-FLUX OF PARTICLES FROM THE TRAPPING REGION AND A STUDY OF THE INTENSITIES OF GEOMAGNETICALLY TRAPPED PARTICLES AT LOW ALTITUDES OVER A WIDE RANGE OF LATITUDES AND LONGITUDES OVER AN EXTENDED PERIOD OF TIME. FOUR CDS-TYPE PARTICLE DETECTORS WERE USED FOR THIS PURPOSE, ONE AT A PITCH ANGLE OF 90 DEG, ONE AT 125 DEG, AND TWO AT 160 DEG (ONE WITH AND ONE WITHOUT A MAGNETIC DEFLECTION WITHIN THE ENTRANCE APERTURE). ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD

TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 8 SEC. THE DETECTORS WERE TO YIELD TOTAL FLUX MEASUREMENTS FOR ELECTRCNS (E.GT. 100 EV) AND PROTCNS (E.GT. 100 EV). EXTREMELY HIGH BACKGROUND COUNTING RATES ENCOUNTERED DURING THE FLIGHT HAVE HINDERED ANALYSIS OF THE DATA.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, CDS COUNTS NSSDC ID 64-0768-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/13/65 TO 07/19/66

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED '8-SEC AVERAGE' FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA CN THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25 EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/BO, VARIOUS MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-0768-02A, -03A, -04A, -05A, AND -06A.

EXPERIMENT NAME- PLASTIC SCINTILLATOR PARTICLE  
DETECTORS

NSSDC ID 64-0768-06

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA  
J.D. CRAVEN, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 07/19/66

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES OF ELECTRONS (E.GT. 5 KEV) MIRRORING AT SATELLITE ALTITUDES AND BEING PRECIPITATED INTO THE EARTH'S UPPER ATMOSPHERE. TWO PLASTIC SCINTILLATOR PARTICLE DETECTORS WERE USED. ONE DETECTOR, WHICH MEASURED ELECTRCNS WITH PITCH ANGLES ABOUT 90 DEG PLUS OR MINUS 15 DEG, OPERATED NORMALLY UNTIL LATE JANUARY 1965. AN APPARENT INTERMITTENT FAILURE IN THE DETECTOR POWER SUPPLY DECREASED FURTHER OBSERVATIONS TO ONLY BRIEF PERIODS THROUGHOUT THE ACTIVE LIFE OF THE SATELLITE. THE OTHER DETECTOR, WHICH MEASURED ELECTRONS WITH PITCH ANGLES ABOUT 40 DEG PLUS OR MINUS 15 DEG, OPERATED NORMALLY THROUGHOUT THE 20-MONTH LIFE OF THE SATELLITE. ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR

LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 8 SEC.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, PLASTIC  
SCINTILLATOR COUNTS

NSSDC ID 64-076B-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/13/65 TO 07/19/66

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A TIME-ORDERED '8-SEC AVERAGE' FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25 EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/B0, VARIOUS MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-076B-02A, -03A, -04A, -05A, AND -06A.

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SPACECRAFT NAME- MARINER 4  
OTHER NAMES- 1964-077A

NSSDC ID 64-077A

LAUNCH DATE- 11/28/64 DATE LAST SCIENTIFIC DATA RECORDED- 12/20/67

AGENCY- NASA-JPL SPACECRAFT WEIGHT IN ORBIT- 262 KG

ORBIT TYPE- HELIOCENTRIC EPOCH- 07/15/65 ORBIT PERIOD- 567 DAYS  
APOGEE- 1.58 AU RAD PERIGEE- 1.1 AU RAD INCLINATION- 0 DEGREES

SPACECRAFT BRIEF DESCRIPTION

MARINER 4 WAS THE FOURTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN A FLYBY MODE. IT WAS DESIGNED TO CONDUCT CLOSEUP SCIENTIFIC OBSERVATIONS OF THE PLANET MARS AND TO TRANSMIT THESE OBSERVATIONS TO EARTH. OTHER MISSION OBJECTIVES WERE TO PERFORM FIELD AND PARTICLE MEASUREMENTS IN INTERPLANETARY SPACE AND IN THE VICINITY OF MARS AND TO PROVIDE EXPERIENCE IN AND KNOWLEDGE OF THE ENGINEERING CAPABILITIES FOR INTERPLANETARY FLIGHTS OF LONG DURATION. AFTER 7.5 MONTHS OF FLIGHT, THE SPACECRAFT FLEW BY MARS ON JULY 14, 1965, AND RETURNED 21 AND A PORTION PHOTOGRAPHS. THE CLOSEST APPROACH WAS 9846 KM FROM THE MARTIAN SURFACE. THE SPACECRAFT PERFORMED ALL PROGRAMMED ACTIVITIES SUCCESSFULLY AT THE PROPER TIMES AND RETURNED USEFUL DATA FROM LAUNCH UNTIL OCTOBER 1965, WHEN THE DISTANCE FROM EARTH AND ITS ANTENNA ORIENTATION TEMPORARILY HALTED THE

SIGNAL INTERPOLATION. DATA ACQUISITION RESUMED IN LATE 1967 AND CONTINUED UNTIL DECEMBER 20, 1967.

EXPERIMENT NAME- MARS TV CAMERA

NSSDC ID 64-077A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- R.B. LEIGHTON, CAL TECH, PASADENA, CALIF.

CATE LAST USEFUL DATA RECORDED- 07/14/65

EXPERIMENT BRIEF DESCRIPTION

THE MARS TELEVISION EXPERIMENT WAS DESIGNED TO OBTAIN PHOTOGRAPHS OF THE MARTIAN SURFACE AND TELEMETER THEM TO EARTH. THE TV SUBSYSTEM CONSISTED OF (1) A CASSEGRAIN NARROW-ANGLE REFLECTING TELESCOPE WITH A 30.5-CM EFFECTIVE FOCAL LENGTH AND A 1.05- BY 1.05-DEG FIELD OF VIEW, (2) A SHUTTER AND FILTER ASSEMBLY THAT HAD 0.02- AND 0.20-SEC EXPOSURE TIMES AND USED RED AND GREEN FILTERS, (3) A SLOW SCAN VIDICON TUBE, WITH A 0.22- BY 0.22-IN. SQ TARGET, WHICH TRANSLATED THE OPTICAL IMAGE INTO AN ELECTRICAL VIDEO SIGNAL, AND (4) RELATED ELECTRONICS INCLUDING A TV DATA ENCODER. ON JULY 14, 1965, AT 0018 UT, THE PICTURE RECORDING SEQUENCE COMMENCED. VIDICON OUTPUT UNDERWENT ANALOG-TO-DIGITAL CONVERSION, AND DATA WERE STORED AT 240,000 BITS PER PICTURE ON A TWO-TRACK, 1/4-IN., MAGNETIC TAPE LOOP 330 FT LONG ON THE SPACECRAFT. TWO OF EVERY THREE PICTURES TAKEN WERE RECORDED ON THE TAPE, RESULTING IN A CHAIN OF PAIRS OF OVERLAPPING, ALTERNATELY FILTERED PICTURES EXTENDING ACROSS THE DISC OF MARS. DATA WERE TRANSMITTED AFTER OCCULTATION OF THE SPACECRAFT BY MARS BY THE RADIO SUBSYSTEM FROM JULY 15 TO 24, 1965, AND WERE PROCESSED IN REAL TIME BY A 7044/7094 SYSTEM TO FORMAT MAGNETIC TAPES OF THE IMAGE DATA FOR PROCESSING BY THE RANGER TELEVISION PROCESSING PROGRAMS AND FOR CONVERSION TO A FILM RECORD. CONVERSION FROM ELECTRICAL SIGNALS TO AN OPTICAL IMAGE WAS PERFORMED BY THE VIDEO-TO-FILM RECORDER USING 64 SHADES. THE EXPERIMENT YIELDED 21 PICTURES PLUS 21 LINES OF PICTURE 22. THIS PERFORMANCE INDICATED A NORMAL RECORDING SEQUENCE. COMPUTER PROCESSING PROGRAMS YIELDED PHOTOGRAPHS WITH GREATER CONTRAST THAN THE RAW IMAGE DATA. A DETAILED DESCRIPTION OF THE TELEVISION EXPERIMENT, DATA PROCESSING, AND THE VARIOUS VERSIONS OF THE PHOTOGRAPHY CAN BE FOUND IN THE JPL 'MARINER MARS 1964 PROJECT REPORT, TELEVISION EXPERIMENT, PART I, INVESTIGATORS' REPORT,' OF THE 'MARINER IV PICTURES OF MARS,' TR 32-884, 1967.

DATA SET NAME- ENHANCED VERSIONS OF TELEVISION PICTURES

NSSDC ID 64-077A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/14/65 TO 07/14/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS SEVERAL TYPES OF ENHANCEMENTS OF THE 21 AND A

FRACTION PICTURES RETURNED BY THE TELEVISION EXPERIMENT. THE PHOTOGRAPHS ARE ON 4- BY 5-IN. NEGATIVE FILM SHEETS. THE FOLLOWING TYPES OF ENHANCEMENTS ARE AVAILABLE -- TYPE A - AERONAUTICAL CHART AND INFORMATION CENTER (ACIC) AIR BRUSH RENDITIONS (AN INTERPRETIVE RENDITION OF WHAT THE SURFACE OF MARS MAY LOOK LIKE), TYPE B - A CALIBRATED AND GEOMETRICALLY CORRECTED VERSION ENHANCED IN CONTRAST, TYPE C - THE SAME AS B, BUT ALSO SHARPENED, TYPE D - A NEGATIVE VERSION OF THE CALIBRATED, ENHANCED PICTURE IN THE ORIGINAL PICTURE FORMAT, TYPE E - A CALIBRATED, CONTRAST-ENHANCED VERSION IN THE ORIGINAL PICTURE FORMAT, TYPE F - SAME AS E VERSION, BUT ALSO SHARPENED, TYPE G - 'FLUCTUATION PLOT' IN WHICH SMOOTH AREAS ARE RENDERED AS DARK AND LOCALLY ROUGH AREAS ARE RENDERED AS LIGHT. CALIBRATION REMOVES THE SENSOR PROPERTIES FROM THE IMAGE, I.E., VIDICON PLATE SHADING. SHARPENING HELPS TO DELINEATE THE CRATER EDGES. VARIANCE PLOTS ARE BASICALLY FOR PHOTOMETRY PURPOSES. THE PICTURES ARE NUMBERED 1B, 1C, ETC., DENOTING PICTURE ORDER NUMBER AND ENHANCEMENT TYPE AS DESIGNATED ABOVE. EACH OF THE FIRST 16 PICTURES TAKEN BY THE VIDICON HAS BEEN ENHANCED BY THE METHODS DESCRIBED. THE ACIC AIRBRUSH RENDITIONS COMBINE TWO OVERLAPPING PICTURES ON ONE 4- BY 5-IN. FILM SHEET. THERE ARE THEREFORE EIGHT OF THESE NUMBERED 1,2A, 3,4A, ETC. THE REMAINING NEGATIVES ARE THE FINAL FIVE AND A FRACTION PICTURES (NUMBERED 17 TO 22) AND A VERSION OF PICTURE NO. 1 THAT WAS ENHANCED TO DISCERN HAZE. SINCE THE PICTURE ELEMENT (PIXEL) RANGE WAS SMALL IN PICTURES 17 TO 22, THE PIXELS HAVE BEEN LINEARLY STRETCHED TO PRESENT SOME CONTRAST IN THE IMAGE. THE LCW CONTRAST DISCERNIBILITY IN THE NEGATIVES, HOWEVER, RESULTS IN PICTURES OF NEGLIGIBLE VALUE. IN A SEPARATE ENHANCEMENT OF PICTURE NO. 1 (DESIGNATED AS 1H), PIXELS WERE STRETCHED AND LIGHTENED ONLY IN THE HAZE PORTIONS IN ORDER TO INDICATE CONTRAST IN THIS PHENOMENON. REPRODUCTIONS AND FURTHER DISCUSSION AND INTERPRETATION OF THESE TELEVISION PICTURES ARE PRESENTED IN 'MARINER MARS 1964 PROJECT REPORT, TELEVISION EXPERIMENT, PART I, INVESTIGATORS' REPORT,' OF JPL TECHNICAL REPORT 32-884, 'MARINER IV PICTURES OF MARS,' BY ROBERT B. LEIGHTON ET AL., 1967.

DATA SET NAME- PICTURE ELEMENT MATRICES

NSSDC ID 64-077A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 07/14/65 TO 07/14/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS RECTIFIED AND UNRECTIFIED VERSIONS OF PICTURES 1 THROUGH 19 IN THE FORM OF PICTURE ELEMENT MATRICES. EACH VERSION IS ON ONE 3.5- BY 2.5-FT PAPER SHEET. PICTURES 20 THROUGH 22 SHOW NO DETAIL. THEY ARE PRESENTED AS REDUCED MATRICES WITH 6- BY 6-ELEMENT AVERAGES AND APPEAR ON ONE SHEET IN THE UNRECTIFIED VERSION ONLY. GEOMETRICAL DISTORTIONS OF THE CAMERA SYSTEM HAVE BEEN REMOVED IN THE RECTIFIED REPRESENTATION BUT NOT IN THE UNRECTIFIED VERSION. EACH PICTURE IS REPRESENTED BY THE MATRIX OF NUMBERS GIVING NORMALIZED CALIBRATED INTENSITIES OBSERVED BY THE MARINER 4 CAMERA SYSTEM. DETAILS NEEDED FOR THE INTERPRETATION OF THESE MATRICES ARE CONTAINED IN PART I OF JPL TECHNICAL REPORT 32-884, 'MARINER IV PICTURES OF MARS,' BY ROBERT B. LEIGHTON ET AL., 1967. THE MATRICES ARE CONTAINED IN PART II OF THE SAME REPORT, 'MARINER MARS 1964 PROJECT REPORT, TELEVISION EXPERIMENT, PART II, PICTURE ELEMENT MATRICES.'

EXPERIMENT NAME- HELIUM MAGNETOMETER

NSSDC ID 64-077A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- E.J. SMITH, NASA-JPL , PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/01/65

EXPERIMENT BRIEF DESCRIPTION

A VECTOR LOW-FIELD HELIUM MAGNETOMETER, NOT TO BE CONFUSED WITH THE RUBIDIUM VAPOR OR HELIUM VAPOR MAGNETOMETER, WAS USED TO MEASURE THE INTERPLANETARY MAGNETIC FIELD. THE THREE COMPONENTS OF THE FIELD WERE MEASURED ESSENTIALLY SIMULTANEOUSLY BUT LATER TRANSMITTED SEQUENTIALLY. EACH OBSERVATION REPRESENTED AN AVERAGE OVER APPROXIMATELY 1 SEC. THE RESPONSE DROPPED 3 DB FOR FREQUENCIES OF 1 HZ, AND HIGHER FREQUENCY INFORMATION WAS ESSENTIALLY LOST. IN EACH DATA FRAME, FOUR VECTOR MEASUREMENTS WERE MADE SEPARATED BY INTERVALS OF 1.5, 0.9, AND 2.4 SEC. THE WHOLE FRAME WAS REPEATED EVERY 12.5 SEC. THERE WAS AN UNCERTAINTY OF PLUS OR MINUS 0.35 GAMMA PER COMPONENT. FIELDS AS HIGH AS 625 GAMMAS WERE MEASURED.

DATA SET NAME- THREE-HR AVERAGED ANALYZED MAGNETIC  
FIELD DATA ON TAPE

NSSDC ID 64-077A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/28/64 TO 10/01/65

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE AS SUPPLIED BY THE EXPERIMENTER. IT CONTAINS (1) 3-HR AVERAGED VALUES OF THE SPHERICAL COMPONENTS OF THE VECTOR MAGNETIC FIELD IN AN INERTIAL HELIOCENTRIC EQUATORIAL COORDINATE SYSTEM, (2) THE FIELD MAGNITUDE, (3) THE RMS DEVIATION OF EACH OF THE AVERAGED VALUES, AND (4) THE NUMBER OF DATA POINTS USED IN THE AVERAGE. THESE DATA PROVIDE ESSENTIALLY COMPLETE COVERAGE FOR HELIOCENTRIC RADIAL DISTANCES FROM 1 TO 1.54 AU AND FOR TIME PERIODS INCLUDING 11 SOLAR ROTATIONS.

DATA SET NAME- 50.4-SEC AVERAGED MAGNETIC FIELD DATA ON  
TAPE

NSSDC ID 64-077A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/28/64 TO 10/01/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE REELS OF IBM 7094, EXPERIMENTER GENERATED.

556-BPI, BINARY, 7-TRACK TAPE. THE DATA CONSIST OF 50.4-SEC AVERAGES OF THE MAGNITUDE OF THE MAGNETIC FIELD AND ITS THREE SPHERICAL COMPONENTS, IN AN INERTIAL HELIOCENTRIC EQUATORIAL COORDINATE SYSTEM, EXPRESSED AS FUNCTIONS OF TIME. THESE TAPES INCLUDE ALL AVAILABLE DATA FOR THE TIME PERIOD FROM NOVEMBER 28, 1964, TO OCTOBER 1, 1965. THERE ARE THREE DATA GAPS OF GREATER THAN 10 DATA POINTS DURING THIS TIME PERIOD. ONE IS LESS THAN 100 DATA POINTS. THE OTHER TWO OCCUR FROM JULY 15, 1965, TO AUGUST 3, 1965, AND FROM AUGUST 31, 1965, TO SEPTEMBER 2, 1965. EACH RECORD CONTAINS 253 WORDS (SIX BYTES/WORD) AND INCLUDES 21 DATA POINTS.

EXPERIMENT NAME- COSMIC-RAY TELESCOPE

NSSDC ID 64-077A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.

J.J. O'GALLAGHER, U OF MARYLAND , COLLEGE PARK, MD.

DATE LAST USEFUL DATA RECORDED- 10/01/65

#### EXPERIMENT BRIEF DESCRIPTION

A SET OF THREE SILICON SURFACE BARRIER DETECTORS WAS USED IN THE FORM OF A DE/DX VS RANGE TELESCOPE TO DETERMINE THE FLUX OF PROTONS IN THE ENERGY INTERVALS 15 TO 70 MEV AND 70 TO 170 MEV, ALPHA PARTICLES IN THE ENERGY RANGE 15 TO 70 MEV/NUCLEON AND E.GT. 70 MEV/NUCLEON, AND PROTONS AND ALPHA PARTICLES IN THE ENERGY INTERVAL E.GT. 1.2 MEV/NUCLEON. THE DETECTOR WAS MOUNTED ON THE SPACECRAFT SO AS TO POINT ALWAYS IN THE ANTISOLAR DIRECTION. A 128-CHANNEL PULSE HEIGHT ANALYZER WAS USED TO SAMPLE THE ENERGY LOSS IN THE TOP DETECTOR ELEMENT OF THE TELESCOPE. IT WAS POSSIBLE TO PULSE HEIGHT ANALYZE PROTONS AND ALPHA PARTICLES FROM 15 TO 70 MEV/NUCLEON, PROTONS FROM 70 TO 170 MEV, AND ALPHA PARTICLES WITH ENERGIES E.GT. 70 MEV/NUCLEON. THE COUNTING RATE AND PULSE HEIGHT OUTPUTS WERE EACH SAMPLED FOR TWO DIFFERENT TIME INTERVALS (7.2 AND 19.2 SEC AT THE 8-1/3-BPS SPACECRAFT TRANSMISSION RATE AND 18 AND 4.8 SEC AT THE 33-1/3-BPS RATE). THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL OCTOBER 1965, WHEN THE SPACECRAFT WAS TURNED OFF TO CONSERVE POWER. WHEN THE SPACECRAFT WAS TURNED ON AGAIN AT A LATER TIME, THE DETECTOR DID NOT RESPOND.

DATA SET NAME- COSMIC-RAY TELESCOPE RAW COUNT  
ACCUMULATIONS ON MAGNETIC TAPE

NSSDC ID 64-077A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/28/64 TO 10/01/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF EDITED, UNCORRECTED, REAL-TIME COUNTING RATE DATA IN A TIME-ORDERED FORMAT. THE DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI WITH 36

CHARACTERS PER LOGICAL RECORD, 50 LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE FILE PER TAPE. EACH LOGICAL RECORD CONTAINS (1) TIME (UT OF THE RECEIPT OF DATA BY EARTH TRACKING STATIONS), (2) DATE, (3) SATELLITE TELEMETRY BIT RATE, (4) CALIBRATION INFORMATION, AND (5) ACCUMULATOR OUTPUTS FROM SEVERAL COINCIDENCE MODES OF THE COSMIC-RAY TELESCOPE -- D1 NOT D2 (ELECTRONS E.GT. 200 KEV AND PROTONS AND HEAVIER NUCLEI E.GT. 1.2 MEV/NUCLEON), D1D2 NOT D3 (PROTONS AND HELIUM NUCLEI 15 TO 70 MEV/NUCLEON), AND D1D2D3 (PROTONS FROM 70 TO 170 MEV AND HELIUM NUCLEI E.GT. 70 MEV/NUCLEON). THERE WERE TWO READOUTS PER SPACECRAFT TELEMETRY FRAME, ALLOWING SAMPLING AT INTERVALS OF 19.2 AND 72 SEC AT THE 8-1/3-BPS SPACECRAFT TRANSMISSION RATE AND OF 4.8 AND 18 SEC AT THE 33-1/3-BPS RATE. THE DATA COVER ABOUT 90 PERCENT OF THE PERIOD WHEN THE SPACECRAFT WAS ACTIVE.

DATA SET NAME- COSMIC-RAY TELESCOPE PULSE HEIGHT  
ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID 64-077A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/28/64 TO 10/01/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF EDITED, REAL-TIME, PULSE HEIGHT DATA IN A TIME-ORDERED FORMAT. THE DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI WITH 48 CHARACTERS PER LOGICAL RECORD, 50 LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE FILE PER TAPE. EACH LOGICAL RECORD CONTAINS (1) TIME (UT OF THE RECEIPT OF DATA BY EARTH TRACKING STATIONS), (2) DATE, (3) SATELLITE TELEMETRY BIT RATE, (4) CALIBRATION INFORMATION, AND (5) PULSE HEIGHT ANALYSIS INFORMATION FOR DETECTOR ELEMENT D1 OF THE COSMIC-RAY TELESCOPE. BY NOTING WHETHER THE D3 ELEMENT OF THE TELESCOPE WAS TRIGGERED AT ONE OF TWO DISCRIMINATION LEVELS, PULSE HEIGHT ANALYSIS OF PROTONS AND ALPHA PARTICLES FROM 15 TO 70 MEV/NUCLEON, PROTONS FROM 70 TO 170 MEV, AND ALPHA PARTICLES WITH ENERGIES E.GT. 70 MEV/NUCLEON WAS POSSIBLE. THE LAST EVENT PRIOR TO READOUT WAS PULSE HEIGHT ANALYZED, AND THERE WERE TWO READOUTS PER SPACECRAFT TELEMETRY FRAME ALLOWING SAMPLING AT INTERVALS OF 19.2 AND 72 SEC AT THE 8-1/3-BPS SPACECRAFT TRANSMISSION RATE AND OF 4.8 AND 18 SEC AT THE 33-1/3-BPS RATE. THE DATA CONSTITUTE ABOUT 90 PERCENT OF THE TELEMETERED DATA.

DATA SET NAME- ONE-HR AND 4-HR AVERAGE COINCIDENCE  
COUNTING RATES ON MAGNETIC TAPE

NSSDC ID 64-077A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/28/64 TO 10/01/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED 1-HR AND 4-HR AVERAGE D1 NOT D2 COINCIDENCE RATES IN A TIME-ORDERED FORMAT ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI. THE TAPE FORMAT CONSISTS OF 132-CHARACTER PHYSICAL RECORDS, WHERE EVERY FIFTH RECORD CORRESPONDS TO THE



4-HR AVERAGE DATA. THE 1-HR AVERAGE COUNTING RATE RECORDS CONTAIN THE TIME (UT) OF THE BEGINNING OF THE 1-HR INTERVAL OF ACCUMULATION, THE DATE, THE CORRECTED COUNTING RATE AVERAGE, AND VARIOUS DATA QUALITY INDICATORS. THE 4-HR RECORDS CONTAIN THE CORRESPONDING INFORMATION FOR THE 4-HR AVERAGES. THE D1 NOT D2 COSMIC-RAY TELESCOPE COINCIDENCE CORRESPONDED TO ELECTRONS WITH ENERGIES E.GT. 200 KEV OR PROTONS AND HEAVIER NUCLEI WITH ENERGIES E.GT. 1.2 MEV/NUCLEON.

DATA SET NAME- FOUR-HR AND 24-HR AVERAGE COINCIDENCE  
COUNTING RATES ON MAGNETIC TAPE

NSSDC ID 64-077A-040

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/26/64 TO 10/01/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED 4-HR AND 24-HR AVERAGE C1D2D3 AND D1D2 NOT D3 COSMIC-RAY TELESCOPE COINCIDENCE COUNTING RATES IN A TIME-ORDERED FORMAT. THE DATA ARE ON ONE 7-TRACK 8CD MAGNETIC TAPE WRITTEN AT 800 BPI. THE DATA FOR EACH ACCUMULATION PERIOD (4 HR OR 24 HR) ARE FORMATTED IN GROUPS OF SEVEN SUCCESSIVE PHYSICAL RECORDS. ALL DATA FOR A GIVEN DAY OF THE MISSION ARE CONTAINED IN AS MANY GROUPS OF SEVEN PHYSICAL RECORDS AS REQUIRED FOR THE 4-HR AVERAGES AND IN ONE ADDITIONAL GROUP OF SEVEN PHYSICAL RECORDS FOR THE 24-HR ACCUMULATION AND CORRECTED COUNTING RATES. THE 4-HR AVERAGES WERE ACCUMULATED EVERY 4 HR STARTING AT 0000 LT FOR A GIVEN DAY AND WERE COMPILED PROVIDED THAT AT LEAST ONE SATELLITE TELEMETRY FRAME (72 SEC LONG) OF COUNTING RATE DATA EXISTED IN THAT TIME INTERVAL. EACH GROUP OF SEVEN PHYSICAL RECORDS CONTAINS THE DAY, TIME (UT OF BEGINNING OF ACCUMULATION PERIOD), CORRECTED ACCUMULATED COUNTS AND COUNTING RATES, AND VARIOUS DATA QUALITY INDICATORS. THE D1D2 NOT D3 COINCIDENCE CORRESPONDS TO PROTONS AND ALPHA PARTICLES FROM 15 TO 70 MEV/NUCLEON, AND THE D1D2D3 COINCIDENCE CORRESPONDS TO PROTONS FROM 70 TO 170 MEV AND ALPHA PARTICLES OF ENERGIES GREATER THAN 70 MEV/NUCLEON.

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SPACECRAFT NAME- 1964-083C  
OTHER NAMES- SE 5

NSSDC ID 64-083C

LAUNCH DATE- 12/13/64

DATE LAST SCIENTIFIC DATA RECORDED- 06/26/65

AGENCY- US NAVY

SPACECRAFT WEIGHT IN ORBIT-

78 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 12/13/64

ORBIT PERIOD- 106 MIN.

APOGEE- 1094. KM ALT

PERIGEE- 1019. KM ALT

INCLINATION- 89.993 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE SCIENTIFIC OBJECTIVES OF THIS USN-APL SPACECRAFT WERE TO ACCURATELY MAP

THE EARTH'S MAGNETIC FIELD OVER THE REGIONS COVERED BY THE SATELLITE ORBIT, TO MAP THE CELESTIAL SPHERE IN THE ULTRAVIOLET REGION, TO STUDY THE SOLAR SPECTRUM, AND TO DETERMINE THE SUBLIMATION RATES OF SELECTED METALS. THIS MAGNETICALLY ALIGNED AND POLAR ORBITING SPACECRAFT WAS POWERED WITH SOLAR CELLS AND NICKEL-CADMIUM BATTERIES. THERE WERE THREE TRANSMITTERS -- TWO WERE USED FOR TRACKING, AND THE THIRD WAS USED FOR THE TRANSMISSION OF ANALOG AND DIGITAL DATA. THE DIGITAL DATA WERE TRANSMITTED AT 195 BPS. ONLY REAL-TIME DATA WERE ACQUIRED FROM THE SATELLITE. ORBITAL COVERAGE FROM LAUNCH TO THE DATE OF LAST USEFUL DATA WAS LESS THAN 20 PERCENT. BECAUSE OF POWER LIMITATIONS, IT WAS NECESSARY TO SWITCH THE POWER FROM EXPERIMENT TO EXPERIMENT AND TO THE DOPPLER NAVIGATIONAL TRANSMITTERS WITH THE EXPERIMENTS TURNED OFF. THE SATELLITE PROVIDED GOOD QUALITY DATA UNTIL JUNE 1965.

EXPERIMENT NAME- RUBIDIUM VAPOR MAGNETOMETER

NSSDC ID 64-083C-01

ORIGINAL EXPERIMENT INSTITUTION- APPLIED PHYSICS LAB

INVESTIGATORS- A.J. ZMUDA, APPLIED PHYSICS LAB , SILVER SPRING, MD.

DATE LAST USEFUL DATA RECORDED- 06/26/65

#### EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO MAP THE INTENSITY OF THE MAGNETIC FIELD OVER THE SATELLITE'S ORBIT AND TO LOOK FOR MAGNETIC EFFECTS OF CURRENTS IN THE IONOSPHERE AND RADIATION BELTS. THE DETECTOR SYSTEM CONSISTED OF A SINGLE-CELL, OPTICALLY PUMPED, SELF OSCILLATING, RUBIDIUM (85) VAPOR MAGNETOMETER. THE FREQUENCY OF THE SYSTEM WAS DIRECTLY RELATED TO THE MAGNETIC FIELD MAGNITUDE. THE MAGNETOMETER WAS MOUNTED AT THE END OF A BOOM THAT EXTENDED ALONG THE MAGNETICALLY ALIGNED AXIS OF THE SATELLITE. THE OPTICAL AXIS OF THE DETECTOR WAS SET AT AN ANGLE OF 45 DEG TO THE BOOM, THUS PROVIDING A MAXIMUM SIGNAL TO NOISE RATIO AND ALLOWING DATA TO BE RECEIVED OVER THE WHOLE ORBIT WITH THE SINGLE MAGNETOMETER. THE DETECTOR OUTPUT WAS COUNTED FOR AN INTERVAL OF 0.08 SEC WITH SUCCESSIVE INTERVALS SEPARATED BY 0.66 SEC. DURING THESE PERIODS, THE SATELLITE TRAVERSED LATITUDINAL ARCS OF 0.6 AND 4.8 KM, RESPECTIVELY. THE BOOM DID NOT EXTEND TO ITS FULL LENGTH IN ORBIT, BUT INFIGHT CALIBRATION (AVAILABLE ON COMMAND) ALLOWED DETERMINATION OF THE BIAS FIELD AT THE MAGNETOMETER. INSTRUMENTAL EFFECTS PRECLUDED THE MEASUREMENT OF FIELD MAGNITUDES GREATER THAN 31,000 GAMMAS. THUS, DATA COVERAGE WAS RESTRICTED TO MIDDLE AND LOW LATITUDES. THE EXPERIMENT PROVIDED USEFUL DATA WITH AN ACCURACY OF PLUS OR MINUS 18 GAMMAS FOR THE PERIODS DECEMBER 13 TO 31, 1964, AND APRIL 10 TO JUNE 26, 1965.

DATA SET NAME- ORIGINAL MAGNETIC FIELD DATA ON MAGNETIC TAPE

NSSDC ID 64-083C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/17/64 TO 06/26/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A SINGLE 7-TRACK, 556-BPI, CARD IMAGE BCD MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE GEOMAGNETIC SCALAR INTENSITY, SATELLITE POSITION (LATITUDE, LONGITUDE, AND RADIAL DISTANCE IN EARTH-FIXED SPHERICAL GEOCENTRIC COORDINATES), AND TIME. THESE DATA ARE FOR INTEGER LATITUDES AND REPRESENT EITHER DIRECT MEASUREMENTS AT THESE LATITUDES OR POINTS LINEARLY INTERPOLATED TO THESE LATITUDES USING CONSECUTIVE MEASUREMENTS SEPARATED BY LATITUDINAL ARCS OF 4.8 KM. THE ERROR IN EACH FIELD VALUE IS ESTIMATED BY THE EXPERIMENTER TO BE PLUS OR MINUS 18 GAMMAS. THE DATA CONSIST OF 1333 FIELD VALUES ORDERED ACCORDING TO LATITUDE FOR DECEMBER 1964 AND APRIL TO JUNE 1965.

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SPACECRAFT NAME- EXPLORER 26  
OTHER NAMES- EPE D. S 3C, 1564-086A  
NSSDC ID 64-086A  
LAUNCH DATE- 12/21/64 DATE LAST SCIENTIFIC DATA RECORDED- 05/26/67  
AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 46.0 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 12/21/64 ORBIT PERIOD- 456 MIN.  
APOGEE- 27192. KM ALT PERIGEE- 305. KM ALT INCLINATION- 20.1 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

EXPLORER 26 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE TRAPPED PARTICLES AND THE GEOMAGNETIC FIELD. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.29 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION. THE OTHER CHANNELS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/800 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.036 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT SYSTEMS FUNCTIONED WELL, EXCEPT FOR SOME UNDERVOLTAGE TURNS OFFS, UNTIL MAY 26, 1967, WHEN THE TELEMETER FAILED. THE INITIAL SPIN RATE WAS 33 RPM, THE SPIN AXIS DIRECTION RIGHT ASCENSION 272.8 DEG, AND THE DECLINATION 21.5 DEG. THE SPIN RATE DECREASED WITH TIME TO 2 RPM ON SEPTEMBER 9, 1965. FOR THE BALANCE OF ITS LIFE, THE SPACECRAFT WAS CONING OR TUMBLING AT A RATE OF ABOUT 1 RPM.

EXPERIMENT NAME- SOLID-STATE ELECTRON DETECTOR  
NSSDC ID 64-086A-01  
ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB  
INVESTIGATORS- W.L. BROWN, BELL TELEPHONE LAB, MURRAY HILL, N.J.  
L.J. LANZEROTTI, BELL TELEPHONE LAB, MURRAY HILL, N.J.

DATE LAST USEFUL DATA RECORDED- 05/22/67

EXPERIMENT BRIEF DESCRIPTION

TRAPPED ELECTRONS AND PROTONS IN THE EARTH'S VAN ALLEN BELTS WERE MEASURED USING A COMBINATION OF OMNIDIRECTIONAL AND DIRECTIONAL SOLID-STATE PARTICLE DETECTORS (SILICON P-N JUNCTIONS). ELECTRONS WERE TO BE ANALYZED IN THE ENERGY RANGES E.GT. 1 MEV, E.GT. 3.5 MEV, AND E.GT. 2.5 MEV WITH THE OMNIDIRECTIONAL DETECTOR, AND IN THE RANGES E.GT. 0.3 MEV AND E.GT. 0.45 MEV WITH THE DIRECTIONAL DETECTORS. PROTONS WERE TO BE ANALYZED IN THE ENERGY RANGES E.GT. 10 MEV, E.GT. 27 MEV, AND E.GT. 21 MEV WITH THE OMNIDIRECTIONAL DETECTOR, AND IN THE RANGES E.GT. 1.7 MEV, E.GT. 2.2 MEV, AND E.GT. 16 MEV WITH THE DIRECTIONAL DETECTORS. SPECIES DISCRIMINATION WAS NOT ALWAYS POSSIBLE. OMNIDIRECTIONAL DATA WERE ACCUMULATED AND TELEMETERED EVERY 1.43 SEC. DIRECTIONAL DATA WERE ACCUMULATED FOR 0.145 SEC AND TELEMETERED EVERY 0.29 SEC. THE SPACECRAFT SPIN PERIOD INCREASED FROM .03 SEC TO .5 SEC DURING THE SPACECRAFT LIFE. PROTON DATA ARE PRIMARILY USEFUL IN IDENTIFYING PROTON CONTAMINATION OF ELECTRON COUNTING RATES. THE INSTRUMENT BEHAVED WELL THROUGHOUT THE SPACECRAFT LIFE.

DATA SET NAME- REDUCED ELECTRON COSMIC-RAY DATA ON  
MAGNETIC TAPE (THRESHOLDS 0.3 TO 3.5 MEV)

NSSDC ID 64-086A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/21/64 TO 05/15/67

DATA SET BRIEF DESCRIPTION

THESE DATA ARE ON SIXTY-EIGHT 7-TRACK, IBM, BINARY TAPES GENERATED AT BELL TELEPHONE LABORATORIES FROM THE ORIGINAL DATA AT 800 BPI (BESYS FORMAT) IN A TIME-ORDERED SEQUENCE. THE DATA INCLUDE THE OUTPUT FROM COUNTERS E1, E2, E3, E5, E6, AND E7 IN A DIGITAL FORMAT, MAGNETIC COORDINATES (L, X), THE ANGLE BETWEEN THE DETECTOR AND ( $\psi \times B$ ) IN RADIAN ( $\psi$  IS FOR SPIN VECTOR), GEOGRAPHIC SATELLITE POSITION, SATELLITE SPIN RATE, UT, TEMPERATURE (PLUS OR MINUS 1 DEG C), AND VARIOUS CONTROL PARAMETERS. COUNTERS E1, E2, AND E3 WERE OMNIDIRECTIONAL, AND COUNTERS E5, E6, AND E7 WERE DIRECTIONAL. THE THRESHOLDS FOR COUNTING ELECTRONS FOR THE SIX COUNTERS WERE 1 MEV, 3.5 MEV, 2.5 MEV, 0.3 MEV, 0.45 MEV, AND 1.7 MEV, RESPECTIVELY. THESE DATA COMPRISE ALL USEFUL DATA FROM THIS EXPERIMENT.

DATA SET NAME- REDUCED ELECTRON COSMIC-RAY DATA ON  
MAGNETIC TAPE (THRESHOLD OF 1.7 MEV)

NSSDC ID 64-086A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/21/64 TO 05/15/67

DATA SET BRIEF DESCRIPTION

THESE DATA ARE ON SIXTY-EIGHT 7-TRACK, IBM, BINARY TAPES GENERATED AT BELL TELEPHONE LABORATORIES FROM DATA SET 64-086A-01A. THE TAPES ARE WRITTEN AT 800 BPI (BESYS FORMAT) IN A TIME-ORDERED SEQUENCE TAKEN FROM COUNTER E7

(DIRECTIONAL COUNTER WITH ELECTRON COUNTING THRESHOLD OF 1.7 MEV). IN ADDITION TO THE DIGITIZED ANALOG OUTPUT FROM COUNTER E7, THE TAPES INCLUDE MAGNETIC COORDINATES (L, X), ANGLE BETWEEN THE DETECTOR AND (W X B) IN RADIAN (WHERE W IS SPIN VECTOR), GEOGRAPHIC SATELLITE POSITION, SATELLITE SPIN RATE, UT, TEMPERATURE (PLUS OR MINUS 1 DEG C), AND VARIOUS CONTROL PARAMETERS.

DATA SET NAME- REDUCED ELECTRON COSMIC-RAY DATA ON  
MAGNETIC TAPE (THRESHOLD OF 0.45 MEV)

NSSDC ID 64-086A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/21/64 TO 05/15/67

DATA SET BRIEF DESCRIPTION

THESE DATA ARE ON SIXTY-EIGHT 7-TRACK, IBM, BINARY TAPES GENERATED AT BELL TELEPHONE LABORATORIES FROM THEIR ORIGINAL DATA. THE TAPES ARE WRITTEN AT 800 BPI (BESYS FORMAT) IN A TIME-ORDERED SEQUENCE FROM COUNTER E6 (DIRECTIONAL COUNTER WITH ELECTRON COUNTING THRESHOLD OF 0.45 MEV). IN ADDITION TO THE DIGITIZED ANALOG OUTPUT FROM COUNTER E6, THE TAPES INCLUDE MAGNETIC COORDINATES (L, X), ANGLE BETWEEN THE DETECTOR AND (W X B) IN RADIAN (WHERE W IS THE SPIN VECTOR), GEOGRAPHIC SATELLITE POSITION, SATELLITE SPIN RATE, UT, TEMPERATURE (PLUS OR MINUS 1 DEG C), AND VARIOUS CONTROL PARAMETERS.

EXPERIMENT NAME- OMNIDIRECTIONAL AND UNIDIRECTIONAL  
ELECTRON AND PROTON FLUXES

NSSDC ID 64-086A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, SD

INVESTIGATORS- C.E. MCILWAIN, U OF CALIFORNIA, SD , LA JOLLA, CALIF.  
R.W. FILLIUS, U OF CALIFORNIA, SD , LA JOLLA, CALIF.

DATE LAST USEFUL DATA RECORDED- 05/25/67

EXPERIMENT BRIEF DESCRIPTION

OMNIDIRECTIONAL FLUXES OF 40- TO 110-MEV PROTONS AND OF ELECTRONS GREATER THAN ABOUT 4 MEV WERE SEPARABLY MEASURED BY A PLASTIC SCINTILLATOR. A SECOND PLASTIC SCINTILLATOR WITH AN 8-DEG HALF-ANGLE APERTURE AND A LOOK DIRECTION PERPENDICULAR TO THE SPACECRAFT SPIN AXIS SEPARABLY MEASURED PROTONS ABOVE 5.2 MEV AND ELECTRONS ABOVE 0.5 MEV. THE ABILITY TO DISTINGUISH BETWEEN THE ENERGY LEVELS WAS DUE TO THE PRESENCE OF TWO DISCRIMINATION LEVELS ASSOCIATED WITH EACH DETECTOR. HIGH QUALITY DATA TRANSMISSION FROM THIS EXPERIMENT WAS ESSENTIALLY CONTINUOUS FROM LAUNCH UNTIL ABOUT THE MIDDLE OF 1966, THEN INTERMITTENT UNTIL MAY 25, 1967, AFTER WHICH NO FURTHER DATA WERE OBTAINED.

DATA SET NAME- L-ORDERED COUNT RATES ON TAPE

NSSDC ID 64-086A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/21/64 TO 02/28/66

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF TWO 7-TRACK, 556-BPI, BCD MAGNETIC TAPES ON WHICH THE DATA HAVE BEEN INTERPOLATED TO ABOUT 65 DISCRETE L VALUES BETWEEN 1.15 AND 7.00. THERE ARE 10 LOGICAL RECORDS OF 144 CHARACTERS EACH PER PHYSICAL RECORD. COUNT RATES FOR BOTH DISCRIMINATION LEVELS OF BOTH DETECTORS ARE PRESENTED. FOR EACH SET OF FOUR COUNTS, TIME (UT), COMPUTED MAGNETIC FIELD MAGNITUDE, AND SPACECRAFT POSITION (ALTITUDE, LATITUDE, LONGITUDE) AND ORIENTATION ARE GIVEN. THESE TAPES, ORDERED ON B AND L, WERE GENERATED BY THE EXPERIMENTER FROM HIS TIME-ORDERED TAPES.

DATA SET NAME- REDUCED COUNT RATES ON TAPE

NSSDC ID 64-086A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/21/64 TO 05/25/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FORTY-TWO 7-TRACK, 556-BPI, CDC 3600, BINARY MAGNETIC TAPES. THERE ARE 10 LOGICAL RECORDS OF 96 CHARACTERS EACH PER PHYSICAL RECORD. TIME-ORDERED REDUCED COUNT RATES FOR BOTH DISCRIMINATION LEVELS OF BOTH DETECTORS, ALONG WITH NOISE FLAGS, SPACECRAFT EPHEMERIS INFORMATION (LATITUDE, LONGITUDE, ALTITUDE, COMPUTED B AND L), AND HOUSEKEEPING INFORMATION, ARE PRESENTED IN EACH LOGICAL RECORD. THE TAPES WERE GENERATED BY THE EXPERIMENTER.

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SPACECRAFT NAME- OSO 2

NSSDC ID 65-007A

OTHER NAMES- 1965-007A, OSO-B2, S 17

LAUNCH DATE- 02/03/65

DATE LAST SCIENTIFIC DATA RECORDED- 06/01/66

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT- 249.9 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 02/03/65 ORBIT PERIOD- 96.50 MIN.

APOGEE-373280. KM ALT

PERIGEE-368013. KM ALT INCLINATION- 32.9 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE OBJECTIVES OF THE OSO SATELLITE SERIES ARE TO PERFORM SOLAR PHYSICS

EXPERIMENTS ABOVE THE ATMOSPHERE DURING A COMPLETE SOLAR CYCLE AND TO MAP THE ENTIRE CELESTIAL SPHERE FOR DIRECTION AND INTENSITY OF UV LIGHT AND X-RAY AND GAMMA RADIATION. THE OSO 2 PLATFORM CONSISTED OF A SAIL SECTION, WHICH POINTED TWO EXPERIMENTS CONTINUOUSLY TOWARD THE SUN, AND A WHEEL SECTION, WHICH SPUN ABOUT AN AXIS PERPENDICULAR TO THE POINTING DIRECTION OF THE SAIL AND CARRIED SIX EXPERIMENTS. ATTITUDE ADJUSTMENT WAS PERFORMED BY GAS JETS. A POINTING CONTROL SYSTEM PERMITTED THE POINTED EXPERIMENTS TO SCAN THE REGION OF THE SUN IN A 40-8Y-40-ARC-MIN RASTER PATTERN. DATA WERE SIMULTANEOUSLY RECORDED ON TAPE AND TRANSMITTED BY PCM/FM TELEMETRY. A COMMAND SYSTEM PROVIDED FOR 70 GROUND-BASED COMMANDS. THE SPACECRAFT PERFORMED NORMALLY UNTIL THE PITCH GAS SUPPLY NEARED EXHAUSTION ON NOVEMBER 6, 1965. THE SPACECRAFT WAS THEN PLACED IN A STOWED CONDITION. THE TRANSMITTER WAS COMMANDED ON INTERMITTENTLY UNTIL MARCH 3, 1966, WHEN IT WAS PLACED ON A WEEKLY SCHEDULE UNTIL JUNE 1, 1966, WHEN IT CEASED OPERATION.

EXPERIMENT NAME- SOLAR X-RAY BURSTS

NSSDC ID 65-007A-02

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

INVESTIGATORS- T.A. CHUBB, NAVAL RESEARCH LAB , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 03/08/65

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED (1) TO MEASURE BURSTS OF SOLAR X RAYS IN THREE WAVELENGTH BANDS (2 TO 8 A, 8 TO 20 A, AND 44 TO 60 A), THE 2- TO 8-A BACKGROUND RADIATION, AND X-RAY EMISSIONS FROM SOLAR PROMINENCES HIGH ABOVE THE SOLAR LIMB AND (2) TO MAP X-RAY SOURCES ON THE SUN IN TWO WAVELENGTH INTERVALS (2 TO 8 A AND 44 TO 60 A). THE EXPERIMENT, LOCATED IN THE SAIL SECTION OF THE SATELLITE, HAD TWO OPERATIONAL MODES -- POINTED AND RASTER. THE POINTED MODE USED FIVE GM TUBE COUNTERS (THREE WERE USED AS BURST DETECTORS, ONE AS A BACKGROUND DETECTOR, AND ONE AS A PROMINENCE DETECTOR) AND WAS DESIGNATED THE SOLAR X-RAY TELESCOPE. THE RASTER MODE, CALLED THE X-RAY SPECTROHELIOGRAPH, USED TWO OF THE BURST DETECTORS. HOWEVER, IT FAILED TO FUNCTION. IN THE POINTED MODE, THE BURST DETECTORS WERE POINTED DIRECTLY AT THE SUN TO WITHIN PLUS OR MINUS 1 ARC-MIN OF THE CENTER OF THE APPARENT SOLAR DISK AND CONTINUOUSLY MONITORED THE SOLAR X-RAY FLUX EXCEPT DURING TELEMETRY READOUT OF THE SATELLITE TAPE RECORDER AND SPACECRAFT NIGHT. THE BACKGROUND DETECTOR WAS POINTED AWAY FROM THE SUN AND PROVIDED A BASIS FOR CORRECTING THE DATA FOR COUNTS CAUSED BY PARTICLE RADIATION. THE PROMINENCE DETECTOR LOOKED AT THE REGION AROUND THE SUN BY MEANS OF AN X-RAY DETECTOR EQUIPPED WITH AN OCCULTING DISK WHICH ARTIFICIALLY ECLIPSED THE SUN. THE INTENSITY MEASUREMENTS FOR THE BURST PORTION OF THE EXPERIMENT WERE ACCURATE TO 7 PERCENT FOR SHORT TIME INTERVALS (8 SEC) AND HAD BETTER THAN 7 PERCENT ACCURACY FOR LONG TIME INTERVALS (8 MIN). THE EXPERIMENT PRODUCED ABOUT 1 MONTH OF X-RAY DATA.

DATA SET NAME- PLOTS AND LISTINGS OF SOLAR X-RAY BURST  
DATA ON MICROFILM

NSSDC ID 65-007A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/04/65 TO 03/08/65

DATA SET BRIEF DESCRIPTION

THE DATA SET IS CONTAINED ON TWO REELS OF 35-MM MICROFILM. THE DATA ARE IN REDUCED FORM, HAVING BEEN CONVERTED FROM GM TUBE COUNTING RATES TO UNITS OF X-RAY FLUX BY USE OF APPROPRIATE CONVERSION FACTORS. THE CONVERSION FACTORS FOR EACH DETECTOR ARE INCLUDED IN THE DATA SET. ONLY THOSE DATA FROM THE POINTED MODE OF THE EXPERIMENT ARE GIVEN SINCE THE RASTER MODE FAILED TO FUNCTION. THE FIRST ROLL OF MICROFILM COVERS THE PERIOD FEBRUARY 4, 1965 (1327 UT), TO FEBRUARY 19, 1965 (0247 UT), AND THE SECOND REEL COVERS FEBRUARY 19, 1965, (0326 UT) TO MARCH 8, 1965 (1858 UT). PLOTS OF HOURLY AND MINUTE FLUX AVERAGES, TABULAR LISTINGS OF MINUTE FLUX AVERAGES AND THEIR STANDARD DEVIATIONS, DETECTOR ENERGY CALIBRATION CURVES, AND DETECTOR SPECTRAL SENSITIVITY CURVES ARE INCLUDED ON THE MICROFILM. THE QUALITY OF THE DATA IS GOOD.

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SPACECRAFT NAME- PEGASUS 1  
OTHER NAMES- 1965-009A

NSSDC ID 65-009A

LAUNCH DATE- 02/16/65

DATE LAST SCIENTIFIC DATA RECORDED- 08/31/69

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

1455 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 02/16/65

ORBIT PERIOD- 97 MIN.

APOGEE- 737. KM ALT

PERIGEE- 502. KM ALT

INCLINATION- 31.8 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE MISSION OF THIS SPACECRAFT WAS TO MEASURE METEOROID ABUNDANCES OVER THE MASS RANGE 10 TO THE MINUS 7 TO 10 TO THE MINUS 4 GRAMS IN THE REGION NEAR THE EARTH. THE SPACECRAFT WAS EQUIPPED WITH WING-LIKE APPENDAGES THAT EXTENDED TO FORM A PLANE 29.3 M LONG BY 4.1 M WIDE. THESE WINGS CARRIED SENSITIVE PENETRATION SURFACES FOR THE METEOROID EXPERIMENTS. ERRORS WERE FOUND IN THE SPACECRAFT ATTITUDE SYSTEM, BUT THE DATA WERE STILL USABLE. OTHERWISE, THE OPERATION WAS NORMAL.

EXPERIMENT NAME- METEOROID PENETRATION DETECTORS

NSSDC ID 65-009A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-MSFC



INVESTIGATORS- R.J. NAUMANN, NASA-MSFC , HUNTSVILLE, ALA.  
K.S. CLIFTON, NASA-MSFC , HUNTSVILLE, ALA.

DATE LAST USEFUL DATA RECORDED- 08/31/69

EXPERIMENT BRIEF DESCRIPTION

THE METEOROID DETECTORS ON THIS EXPERIMENT WERE PARALLEL-PLATE CAPACITORS THAT TEMPORARILY DISCHARGED WHEN PENETRATED BY METEORIDS. A TOTAL OF 416 CAPACITORS FORMED 208 DETECTOR ASSEMBLIES, WHICH WERE LOCATED ON THE WINGS OF THE SPACECRAFT. THE TOTAL AREA OF THE DETECTORS WAS APPROXIMATELY 188 SQ M. THE OUTSIDE PLATES OF THE CAPACITORS WERE EITHER 0.4-, 0.2-, OR 0.04-MM-THICK ALUMINUM. THE THICKNESS PENETRATED PROVIDED INFORMATION ABOUT THE SIZE OF THE PENETRATING METEORIDS. PENETRATION TIMES WERE RECORDED WITH AN ACCURACY OF 1 MIN. A HIGHER THAN EXPECTED PERMANENT ELECTRICAL SHORT RATE OCCURRED IN THE 0.4- AND 0.2-MM-THICK DETECTORS, AND SOME SPURIOUS DISCHARGES OCCURRED.

DATA SET NAME- METEOROID PENETRATION DATA ON TAPE

NSSDC ID 65-009A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/17/65 TO 03/29/66

DATA SET BRIEF DESCRIPTION

THESE ARE REDUCED DATA AS RECEIVED FROM THE EXPERIMENTER. THIS DATA SET IS AVAILABLE AS ONE TAPE CONTAINING APPROXIMATELY 4000 CARD IMAGES. THE TAPE WAS WRITTEN ON THE IBM 7094 IN EVEN PARITY, WITH 84 BCD CHARACTERS PER RECORD, AT A DENSITY OF 556 BPI. THE FOLLOWING INFORMATION IS INCLUDED FOR EACH PENETRATION -- DATE, TIME, SIDE PENETRATED, PANEL PENETRATED, THICKNESS PENETRATED, LATITUDE AND LONGITUDE OF THE SPACECRAFT, AND EITHER SPACECRAFT HOUSEKEEPING DATA (E.G., TEMPERATURES, SPACECRAFT CLOCK) OR SPACECRAFT LOCATION IN EQUATORIAL AND ECLIPTIC COORDINATES. SEE 'PEGASUS METEOROID PENETRATION DETECTORS,' NSSDC DATA USERS' NOTE 69-15, BY G. FULLER AND M. BEELER. DATA FROM PEGASUS 2 (65-039A-01A) AND PEGASUS 3 (65-060A-01A) ARE ALSO CONTAINED ON THIS TAPE.

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SPACECRAFT NAME- RANGER 8  
OTHER NAMES- 1565-010A

NSSDC ID 65-010A

LAUNCH DATE- 02/17/65

DATE LAST SCIENTIFIC DATA RECORDED- 02/20/65

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT- 809 KG

ORBIT TYPE-	EPOCH-	/	/	ORBIT PERIOD-	MIN.
APOGEE-	KM ALT	PERIGEE-	KM ALT	INCLINATION-	DEGREES

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS DESIGNED TO ACHIEVE A LUNAR IMPACT TRAJECTORY AND TO

TRANSMIT HIGH-RESOLUTION PHOTOGRAPHS OF THE LUNAR SURFACE DURING THE FINAL MINUTES OF FLIGHT. THE SPACECRAFT CARRIED SIX TELEVISION CAMERAS, AN OPTICAL EARTH SENSOR AND HIGH-GAIN ANTENNA FOR OPTIMUM COMMUNICATIONS, AND SOLAR PANELS TO PROVIDE POWER, AS WELL AS ADDITIONAL ENGINEERING EQUIPMENT. THE TELECOMMUNICATIONS EQUIPMENT CONVERTED THE COMPOSITE VIDEO SIGNAL FROM THE CAMERA TRANSMITTERS INTO AN RF SIGNAL FOR SUBSEQUENT TRANSMISSION THROUGH THE SPACECRAFT HIGH-GAIN ANTENNA. SUFFICIENT VIDEO BANDWIDTH WAS PROVIDED TO ALLOW FOR RAPID FRAMING SEQUENCES OF BOTH NARROW- AND WIDE-ANGLE TELEVISION PICTURES. THE SPACECRAFT ENCOUNTERED THE LUNAR SURFACE IN A DIRECT HYPERBOLIC TRAJECTORY, WITH INCOMING ASYMPTOTIC DIRECTION AT AN ANGLE OF -13.6 DEG FROM THE LUNAR EQUATOR. THE ORBIT PLANE WAS INCLINED 16.5 DEG TO THE LUNAR EQUATOR. AFTER 64.9 HR OF FLIGHT, IMPACT OCCURRED AT 2.7 DEG N LATITUDE, 24.8 DEG E LONGITUDE (SELENOGRAPHIC COORDINATES) IN MARE TRANQUILLITATUS. THE SPACECRAFT PERFORMANCE WAS EXCELLENT. THE SPACECRAFT TRANSMITTED 7137 PHOTOGRAPHS DURING THE FINAL 23 MIN OF FLIGHT, 0934 UT TO 0957 UT, ON FEBRUARY 20, 1965.

EXPERIMENT NAME- LUNAR TELEVISION

NSSDC ID 65-010A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- G.P. KUIPER, U OF ARIZONA , TUCSON, ARIZ.  
R.L. HEACOCK, NASA-JPL , PASADENA, CALIF.  
E.M. SHOEMAKER, CAL TECH , PASADENA, CALIF.  
H.C. UREY, U OF CALIFORNIA, SD , LA JOLLA, CALIF.  
E.A. WHITAKER, U OF ARIZONA , TUCSON, ARIZ.

DATE LAST USEFUL DATA RECORDED- 02/20/65

#### EXPERIMENT BRIEF DESCRIPTION

THE TELEVISION SYSTEM CONSISTED OF SIX SLOW SCAN VIDICON TV CAMERAS CAPABLE OF TRANSMITTING HIGH-RESOLUTION CLOSEUP TELEVISION PICTURES OF THE LUNAR SURFACE DURING THE FINAL MINUTES OF FLIGHT BEFORE THE SPACECRAFT IMPACTED THE LUNAR SURFACE. THESE PHOTOGRAPHS PROVIDED SMALL-SCALE TOPOGRAPHIC INFORMATION NEEDED FOR THE SURVEYOR AND APOLLO PROJECTS. VIDICONS 2.54 CM IN DIAMETER WITH AN ANTIMONY-SULFIDE OXY-SULFIDE (ASOS) PHOTOCONDUCTOR TARGET WERE USED FOR IMAGE SENSING IN ALL SIX CAMERAS. THERE WERE TWO CAMERA CHANNELS WHICH HAD INDEPENDENT POWER DISTRIBUTION NETWORKS SO THAT THE GREATEST RELIABILITY AND PROBABILITY OF OBTAINING HIGHEST QUALITY VIDEO PICTURES WOULD BE AFFORDED. THE FIRST CHANNEL HAD TWO FULL-SCAN CAMERAS, ONE NARROW ANGLE (25-MM LENS) AND ONE WIDE ANGLE (76-MM LENS). THESE CAMERAS, DESIGNATED A-CAMERA AND B-CAMERA, UTILIZED AN ACTIVE IMAGE AREA OF 11 SQ MM THAT CONTAINED 1150 LINES AND WAS SCANNED IN 2.5 SEC. SCAN AND ERASE CYCLES WERE DESIGNED TO ACT ALTERNATELY, RESULTING IN INTERVALS OF 5 SEC BETWEEN CONSECUTIVE PICTURES ON A PARTICULAR CAMERA. THE OTHER CHANNEL HAD FOUR PARTIAL-SCAN (P) CAMERAS, TWO NARROW ANGLE AND TWO WIDE ANGLE. THE IMAGE AREA OF THESE FOUR CAMERAS WAS 2.8 SQ MM, CONTAINED 300 LINES, AND WAS SCANNED IN 0.2 SEC. THE TV SYSTEM ALLOWED FOR CAMERA FIELDS OF VIEW,

WHICH RANGED FROM 25 DEG TO 2.1 DEG, TO OVERLAP AND PRODUCE A 'NESTING' SEQUENCE OF PICTURES. THE VIDEO TRANSMISSIONS WERE RECORDED ON BOTH KINESCOPE FILM RECORDERS AND MAGNETIC TAPE RECORDERS. A CATHODE-RAY TUBE RECONSTRUCTED THE ORIGINAL IMAGE, WHICH WAS THEN PHOTOGRAPHED ON 35-MM FILM. BOTH FULL-SCAN AND PARTIAL-SCAN CAMERA SYSTEMS OPERATED DURING THE FINAL 23 MIN OF FLIGHT, 0934 UT TO 0957 UT, ON FEBRUARY 20, 1965. RESOLUTION WAS ACHIEVED TO 1.5 M. THE EXPERIMENT RETURNED 6597 PARTIAL-SCAN AND 540 FULL-SCAN PICTURES GIVING THE DESIRED BROAD COVERAGE OF THE LUNAR SURFACE.

DATA SET NAME- LUNAR PHOTOGRAPHS

NSSDC ID 65-010A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/20/65 TO 02/20/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS PHOTOGRAPHS THAT PROVIDE INFORMATION ABOUT SMALL TOPOGRAPHIC FEATURES OF THE LUNAR SURFACE. THE TOTAL FULL-SCAN AND PARTIAL-SCAN DATA TRANSMITTED BY THE EXPERIMENT ARE CONTAINED ON ONE REEL OF EASTMAN KODAK TYPE-5265 35-MM FILM. IT IS A DUPLICATE NEGATIVE OF THE MASTER POSITIVE PRINTS THAT WERE MATCHED VERY CLOSELY TO ACHIEVE THE DENSITY DISTRIBUTION OF THE ORIGINAL NEGATIVE. THE ORIGINAL NEGATIVE WAS OBTAINED FROM TAPE PLAYBACK.

DATA SET NAME- ATLAS OF LUNAR PHOTOGRAPHS

NSSDC ID 65-010A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 02/20/65 TO 02/20/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS AN ATLAS OF PHOTOGRAPHS, OBTAINED FROM THE TELEVISION EXPERIMENT, ENTITLED 'RANGER VIII PHOTOGRAPHS OF THE MOON' (NASA SP-111). IT INCLUDES 60 OF THE 270 A-CAMERA PHOTOGRAPHS, 90 OF THE 270 B-CAMERA PHOTOGRAPHS, AND 20 OF THE P-CAMERA HIGH-RESOLUTION FRAMES (79 PHOTOGRAPHS). THE ATLAS INCLUDES MISSION AND CAMERA SYSTEM DESCRIPTIONS AND TABLES OF VALUES FOR EACH PICTURE PUBLISHED. THE ATLAS WAS REPRODUCED PHOTOGRAPHICALLY TO PRESERVE THE IMAGE CONTENT OF THE NCN-RETOUCHED PHOTOGRAPHS. IT CAN BE OBTAINED FROM THE GOVERNMENT PRINTING OFFICE.

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SPACECRAFT NAME- RANGER 9  
OTHER NAMES- 1565-023A

NSSDC ID 65-023A

LAUNCH DATE- 03/21/65

DATE LAST SCIENTIFIC DATA RECORDED- 03/24/65

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

809 KG

ORBIT TYPE-

EPOCH-

/ /

ORBIT PERIOD-

MIN.

APOGEE-

KM ALT

PERIGEE-

KM ALT

INCLINATION-

DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS DESIGNED TO ACHIEVE A LUNAR IMPACT TRAJECTORY AND TO TRANSMIT HIGH-RESOLUTION PHOTOGRAPHS OF THE LUNAR SURFACE DURING THE FINAL MINUTES OF FLIGHT. THE SPACECRAFT CARRIED SIX TELEVISION CAMERAS, AN OPTICAL EARTH SENSOR AND HIGH-GAIN ANTENNA FOR OPTIMUM COMMUNICATIONS, AND SOLAR PANELS TO PROVIDE POWER, AS WELL AS ADDITIONAL ENGINEERING EQUIPMENT. THE TELECOMMUNICATIONS EQUIPMENT CONVERTED THE COMPOSITE VIDEO SIGNAL FROM THE CAMERA TRANSMITTERS INTO AN RF SIGNAL FOR SUBSEQUENT TRANSMISSION THROUGH THE SPACECRAFT HIGH-GAIN ANTENNA. SUFFICIENT VIDEO BANDWIDTH WAS PROVIDED TO ALLOW FOR RAPID FRAMING SEQUENCES OF BOTH NARROW- AND WIDE-ANGLE TELEVISION PICTURES. THE SPACECRAFT ENCOUNTERED THE LUNAR SURFACE WITH INCOMING ASYMPTOTIC DIRECTION AT AN ANGLE OF -5.6 DEG FROM THE LUNAR EQUATOR. THE ORBIT PLANE WAS INCLINED 15.6 DEG TO THE LUNAR EQUATOR. AFTER 64.5 HR OF FLIGHT, IMPACT OCCURRED AT 13.1 DEG S LATITUDE, 2.4 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES) IN THE CRATER ALPHONSUS. THE SPACECRAFT PERFORMANCE WAS EXCELLENT. THE SPACECRAFT TRANSMITTED 5814 PHOTOGRAPHS DURING THE FINAL 19 MIN OF FLIGHT, 1349 UT TO 1408 UT ON MARCH 24, 1965.

EXPERIMENT NAME- LUNAR TELEVISION

NSSDC ID 65-023A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- G.P. KUIPER, U OF ARIZONA, TUCSON, ARIZ.  
R.L. HEACOCK, NASA-JPL, PASADENA, CALIF.  
E.M. SHOEMAKER, CAL TECH, PASADENA, CALIF.  
H.C. UREY, U OF CALIFORNIA, SD, LA JOLLA, CALIF.  
E.A. WHITAKER, U OF ARIZONA, TUCSON, ARIZ.

DATE LAST USEFUL DATA RECORDED- 03/24/65

#### EXPERIMENT BRIEF DESCRIPTION

THE TELEVISION SYSTEM CONSISTED OF SIX SLOW SCAN VIDICON TV CAMERAS CAPABLE OF TRANSMITTING HIGH-RESOLUTION CLOSEUP TELEVISION PICTURES OF THE LUNAR SURFACE DURING THE FINAL MINUTES OF FLIGHT BEFORE THE SPACECRAFT IMPACTED THE LUNAR SURFACE. THESE PHOTOGRAPHS PROVIDED SMALL-SCALE TOPOGRAPHIC INFORMATION NEEDED FOR THE SURVEYOR AND APOLLO PROJECTS. VIDICONS 2.54 CM IN DIAMETER WITH AN ANTIMONY-SULFIDE OXY-SULFIDE (ASOS) PHOTOCONDUCTOR TARGET WERE USED FOR IMAGE SENSING IN ALL SIX CAMERAS. THERE WERE TWO CAMERA CHANNELS WHICH HAD INDEPENDENT POWER DISTRIBUTION NETWORKS SO THAT

THE GREATEST RELIABILITY AND PROBABILITY OF OBTAINING HIGHEST QUALITY VIDEO PICTURES WOULD BE AFFORDED. THE FIRST CHANNEL HAD TWO FULL-SCAN CAMERAS, ONE NARROW ANGLE (25-MM LENS) AND ONE WIDE ANGLE (76-MM LENS). THESE CAMERAS, DESIGNATED A-CAMERA AND B-CAMERA, UTILIZED AN ACTIVE IMAGE AREA OF 11 SQ MM THAT CONTAINED 1150 LINES AND WAS SCANNED IN 2.5 SEC. SCAN AND ERASE CYCLES WERE DESIGNED TO ACT ALTERNATELY, RESULTING IN INTERVALS OF 5 SEC BETWEEN CONSECUTIVE PICTURES ON A PARTICULAR CAMERA. THE OTHER CHANNEL HAD FOUR PARTIAL-SCAN (P) CAMERAS, TWO NARROW ANGLE AND TWO WIDE ANGLE. THE IMAGE AREA OF THESE FOUR CAMERAS WAS 2.8 SQ MM, CONTAINED 300 LINES, AND WAS SCANNED IN 0.2 SEC. THE INSTRUMENT ALLOWED FOR CAMERA FIELDS OF VIEW, WHICH RANGED FROM 25 DEG TO 2.1 DEG, TO OVERLAP AND PRODUCE A 'NESTING' SEQUENCE OF PICTURES. THE PHOTOGRAPHS WERE RECORDED ON BOTH KINESCOPE FILM RECORDERS AND MAGNETIC TAPE RECORDERS. A CATHODE-RAY TUBE RECONSTRUCTED THE ORIGINAL IMAGE, WHICH WAS THEN PHOTOGRAPHED ON 35-MM FILM. BOTH FULL-SCAN AND PARTIAL-SCAN CAMERA SYSTEMS OPERATED DURING THE FINAL 19 MIN OF FLIGHT, 1349 UT TO 1408 UT ON MARCH 24, 1965. A TOTAL OF 5814 PHOTOGRAPHS WERE RECEIVED, ALL WITH GOOD CONTRAST AND HIGH SHADOWING. THREE OF THE CAMERAS OBTAINED A RESOLUTION OF 0.3 M.

DATA SET NAME- LUNAR PHOTOGRAPHS

NSSDC ID 65-023A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 03/24/65 TO 03/24/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS PHOTOGRAPHS THAT PROVIDE INFORMATION ABOUT SMALL TOPOGRAPHIC FEATURES OF THE LUNAR SURFACE. THE TOTAL FULL-SCAN AND PARTIAL-SCAN DATA TRANSMITTED BY THE EXPERIMENT ARE CONTAINED ON ONE REEL OF EASTMAN KODAK TYPE-5265 35-MM FILM. IT IS A DUPLICATE NEGATIVE OF THE MASTER POSITIVE PRINTS THAT WERE MATCHED VERY CLOSELY TO ACHIEVE THE DENSITY DISTRIBUTION OF THE ORIGINAL NEGATIVE. THE ORIGINAL NEGATIVE WAS OBTAINED FROM TAPE PLAYBACK.

DATA SET NAME- ATLAS OF LUNAR PHOTOGRAPHS

NSSDC ID 65-023A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 03/24/65 TO 03/24/65

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS AN ATLAS OF PHOTOGRAPHS, OBTAINED FROM THE TELEVISION EXPERIMENT, ENTITLED 'RANGER IX PHOTOGRAPHS OF THE MOON' (NASA SP-112). IT INCLUDES 70 OF THE 220 A-CAMERA PHOTOGRAPHS, 88 OF THE 220 B-CAMERA PHOTOGRAPHS, AND THE FINAL 12 P-CAMERA FRAMES (46 PHOTOGRAPHS). THE ATLAS INCLUDES MISSION AND CAMERA SYSTEM DESCRIPTIONS AND TABLES OF VALUES FOR EACH PICTURE PUBLISHED. THE ATLAS WAS REPRODUCED PHOTOGRAPHICALLY TO PRESERVE THE IMAGE CONTENT OF THE KEN-RETOUCHED

PHOTOGRAPHS. IT CAN BE OBTAINED FROM THE GOVERNMENT PRINTING OFFICE.

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SPACECRAFT NAME- PEGASUS 2  
OTHER NAMES- 1565-039A

NSSDC ID 65-039A

LAUNCH DATE- 05/25/65      DATE LAST SCIENTIFIC DATA RECORDED- 08/31/69

AGENCY- NASA-DSSA      SPACECRAFT WEIGHT IN ORBIT- 1455 KG

ORBIT TYPE- GEOCENTRIC      EPOCH- 05/25/65      ORBIT PERIOD- 97 MIN.  
APOGEE- 742. KM ALT      PERIGEE- 511. KM ALT      INCLINATION- 31.8 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE MISSION OF THIS SPACECRAFT WAS TO MEASURE METEOROID ABUNDANCES OVER THE MASS RANGE 10 TO THE MINUS 7 TO 10 TO THE MINUS 4 GRAMS IN THE REGION NEAR THE EARTH. THE SPACECRAFT WAS EQUIPPED WITH WINGLIKE APPENDAGES THAT EXTENDED TO FORM A PLANE 29.3 M LONG BY 4.1 M WIDE. THESE WINGS CARRIED SENSITIVE PENETRATION SURFACES FOR THE EXPERIMENTS. INTERMITTENT FAILURES OCCURRED IN THE PAM AND PCM TELEMETRY CHANNELS, BUT STABLE PCM COMMUNICATIONS WERE REESTABLISHED.

EXPERIMENT NAME- METEOROID PENETRATION DETECTORS

NSSDC ID 65-039A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-MSFC

INVESTIGATORS- R.J. NAUMANN, NASA-MSFC , HUNTSVILLE, ALA.  
K.S. CLIFTON, NASA-MSFC , HUNTSVILLE, ALA.

DATE LAST USEFUL DATA RECORDED- 08/31/69

#### EXPERIMENT BRIEF DESCRIPTION

THE METEOROID DETECTORS ON THIS EXPERIMENT WERE PARALLEL-PLATE CAPACITORS THAT TEMPORARILY DISCHARGED WHEN PENETRATED BY METEORIDS. A TOTAL OF 416 CAPACITORS FORMED 208 DETECTOR ASSEMBLIES, WHICH WERE LOCATED ON THE WINGS OF THE SPACECRAFT. THE TOTAL AREA OF THE DETECTORS WAS APPROXIMATELY 188 SQ M. THE OUTSIDE PLATES OF THE CAPACITORS WERE EITHER 0.4-, 0.2-, OR 0.04-MM-THICK ALUMINUM. THE THICKNESS PENETRATED PROVIDED INFORMATION ABOUT THE SIZE OF THE PENETRATING METEORIDS. PENETRATION TIMES WERE RECORDED WITH AN ACCURACY OF 1 MIN. THE EXPERIMENT FUNCTIONED NORMALLY.

DATA SET NAME- METEOROID PENETRATION DATA ON TAPE

NSSDC ID 65-039A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/65 TO 10/31/67

DATA SET BRIEF DESCRIPTION

THESE DATA ARE REDUCED DATA FROM THE EXPERIMENTER. THIS DATA SET IS AVAILABLE AS ONE TAPE CONTAINING APPROXIMATELY 4000 CARD IMAGES. THE TAPE WAS WRITTEN ON AN IBM 7094 IN EVEN PARITY, WITH 84 BCD CHARACTERS PER RECORD, AT A DENSITY OF 556 BPI. THE FOLLOWING INFORMATION IS INCLUDED FOR EACH PENETRATION -- DATE, TIME, SIDE PENETRATED, PANEL PENETRATED, THICKNESS PENETRATED, LATITUDE AND LONGITUDE OF THE SPACECRAFT, AND EITHER SPACECRAFT HOUSEKEEPING DATA (E.G., TEMPERATURES, SPACECRAFT CLOCK) OR SPACECRAFT LOCATION IN EQUATORIAL AND ECLIPTIC COORDINATES. SEE 'PEGASUS METEOROID PENETRATION DETECTORS,' NSSDC DATA USERS' NOTE 69-15, BY G. FULLER AND M. BEELER. DATA FROM PEGASUS 1 (65-009A-01A) AND PEGASUS 3 (65-060A-01A) ARE ALSO CONTAINED ON THIS TAPE.

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SPACECRAFT NAME- EXPLORER 28

NSSDC ID 65-042A

OTHER NAMES- IMP-C, IMP 3, 1965-042A, S 748

LAUNCH DATE- 05/29/65

DATE LAST SCIENTIFIC DATA RECORDED- 05/12/67

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT- 51.8 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 05/29/65 ORBIT PERIOD- 8400 MIN.

APOGEE-260777. KM ALT

PERIGEE- 205. KM ALT INCLINATION- 33.87 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 28 (IMP 3) WAS A SOLAR-CELL AND CHEMICAL-BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 2020 HR, A SPIN RATE OF 23.7 RPM, AND A SPIN DIRECTION OF 64.9 DEG RIGHT ASCENSION AND -10.9 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9-SEC DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL TELEMETRY SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. PERFORMANCE WAS ESSENTIALLY NORMAL UNTIL LATE APRIL 1967, THEN INTERMITTENT UNTIL MAY 12, 1967, AFTER WHICH NO FURTHER DATA WERE ACQUIRED.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON  
TAPE

NSSDC ID 65-042A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/29/65 TO 05/11/67

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF TWENTY-ONE 7-TRACK, 556-BPI, IBM 7094, BINARY MAGNETIC TAPES PROVIDED BY N.F. KESS. THE TAPES LIST THE FOLLOWING INFORMATION IN 5-MIN INTERVALS -- (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE IMP 3 SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS AT LEAST 80 PERCENT.

EXPERIMENT NAME- RETARDING POTENTIAL ANALYZER

NSSDC ID 65-042A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- G.P. SERBU, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 05/12/67

EXPERIMENT BRIEF DESCRIPTION

THE RETARDING POTENTIAL ANALYZER WAS A FOUR-ELEMENT FARADAY CUP. IT WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS AND HAD AN EFFECTIVE LOOK ANGLE OF 5 STER. THE EXPERIMENT OPERATED FOR 5.2 SEC IN EACH OF SIX MODES ONCE EVERY 648 SEC. IN TWO MODES, 15-STEP SPECTRA FOR IONS WERE DETERMINED FOR RETARDING POTENTIALS IN THE RANGES -5 V TO +5 V AND -5 V TO +45 V. IN TWO OTHER MODES, SIMILAR INFORMATION FOR ELECTRONS WAS OBTAINED BY CHANGING THE SIGNS OF THE POTENTIALS. THE REMAINING TWO MODES WERE NET CURRENT MODES WITH ZERO POTENTIAL APPLIED TO ALL ELEMENTS FOR 15 MEASUREMENTS. THE INSTRUMENT EXPERIENCED SECONDARY ELECTRON CONTAMINATION, BUT OPERATED WITHOUT DEGRADATION DURING THE SPACECRAFT LIFETIME.

DATA SET NAME- ANALYZED ELECTRON TEMPERATURE AND  
DENSITY VALUES ON MAGNETIC TAPE

NSSDC ID 65-042A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME SPAN OF DATA- 05/29/65 TO 05/05/67

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA, GENERATED BY THE EXPERIMENTER, ARE ON ONE IBM 7094,



7-TRACK, 800-BPI, EVEN PARITY, BCD MAGNETIC TAPE WITH EIGHTEEN 155-CHARACTER LOGICAL RECORDS PER PHYSICAL RECORD. THOSE DATA TAKEN AT RADIAL DISTANCES FROM THE EARTH OF LESS THAN 5 EARTH RADII WILL PROBABLY BE THE MOST USEFUL. THE TIME-ORDERED TAPE CONTAINS A MEASURE OF THE ELECTRON DENSITY, TEMPERATURES FOR A TWO-ENERGY COMPONENT MAXWELLIAN FIT TO THE DATA, AND A MEASURE OF THE SPACECRAFT POTENTIAL. EPHEMERIS DATA ARE ALSO INCLUDED.

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID 65-042A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- N.F. NESS, NASA-GSFC , GREENBELT, MD.  
D.H. FAIRFIELD, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 05/11/67

EXPERIMENT BRIEF DESCRIPTION

EACH OF TWO UNIAXIAL FLUXGATE MAGNETOMETERS HAD A DYNAMIC RANGE OF PLUS OR MINUS 40 GAMMAS AND A SENSITIVITY OF PLUS OR MINUS 0.25 GAMMA. ONE FLUXGATE FAILED AT LAUNCH, BUT THE OTHER PERFORMED NORMALLY, SAMPLING THE MAGNETIC FIELD 30 TIMES WITHIN EACH OF SIX 4.8-SEC INTERVALS EVERY 5.46 MIN. UNCERTAINTIES IN DATA VALUES TRANSMITTED UNTIL MAY 11, 1967, ARE PLUS OR MINUS 1.0 GAMMA. A RUBIDIUM VAPOR MAGNETOMETER WAS INCLUDED IN THE EXPERIMENT PACKAGE, BUT IT PRODUCED NO USEFUL DATA.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON BINARY TAPE

NSSDC ID 65-042A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/29/65 TO 05/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF NINE 9-TRACK, 800-BPI, BINARY MAGNETIC TAPES WRITTEN ON AN IBM 360 COMPUTER. THE ANALYZED FLUXGATE MAGNETOMETER DATA ARE AS RECEIVED FROM THE EXPERIMENTER -- 5.46-MIN AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM. TIME COVERAGE EXTENDS FROM MAY 29, 1965, THROUGH MAY 11, 1967, WITH 90 PERCENT COMPLETENESS. INCOMPLETE EPHEMERIS INFORMATION (RADIAL DISTANCE ONLY) IS CONTAINED ON THE TAPES.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON BCD TAPE

NSSDC ID 65-042A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/29/65 TO 05/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS NINE 7-TRACK, 556-BPI, BCD MAGNETIC TAPES AND IS A REFORMATTING OF DATA SET 65-042A-02A PERFORMED BY NSSDC PERSONNEL.

DATA SET NAME- 5.46-MIN VECTOR MAGNETIC FIELD DATA  
MERGED WITH EPHEMERIS DATA ON TAPE

NSSDC ID 65-042A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/29/65 TO 05/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES GENERATED AT NSSDC. THE FLUXGATE DATA CONTAINED IN DATA SET 65-042A-02A ARE MERGED WITH COMPLETE EPHEMERIS DATA GIVEN IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES.

DATA SET NAME- 5.46-MIN AVERAGES OF VECTOR MAGNETIC  
FIELD DATA ON REFORMATTED TAPE

NSSDC ID 65-042A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/29/65 TO 05/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES ON WHICH THE DATA OF DATA SET 65-042A-02A HAVE BEEN BLOCKED 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES WERE GENERATED AT NSSDC.

DATA SET NAME- HOURLY AVERAGED VALUES OF INTERPLANETARY  
MAGNETIC FIELD DATA ON TAPE

NSSDC ID 65-042A-02E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/01/65 TO 01/29/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO 9-TRACK, 800-BPI, IBM 360, BCD MAGNETIC TAPES PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM. ONLY DATA OBTAINED IN INTERPLANETARY SPACE ARE INCLUDED. THE PERIODS JUNE 1, 1965, TO JANUARY 26, 1966, AND JULY 1, 1966, TO JANUARY 29, 1967, ARE COVERED WITH 90 PERCENT COMPLETENESS.

NSSDC ID 65-042A-02F

TIME SPAN OF DATA- 06/01/65 TO 01/29/67

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT LISTS THE CONTENTS OF DATA SET 65-042A-02E.

NSSDC ID 65-042A-02G

TIME SPAN OF DATA- 05/29/65 TO 05/10/67

THIS DATA SET CONSISTS OF ONE 9-TRACK, 800-BPI, IBM 360, BCD MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL REPRESENTATIONS IN SOLAR MAGNETOSPHERIC COORDINATES. ONLY HOURLY AVERAGES WITHIN THE MAGNETOSPHERE ARE INCLUDED. TIME COVERAGE EXTENDS FROM MAY 29, 1965, TO MAY 10, 1967, WITH ABOUT 20 PERCENT COMPLETENESS.

NSSDC ID 65-042A-02H

TIME SPAN OF DATA- 05/29/65 TO 05/10/67

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT LISTS THE CONTENTS OF DATA SET 65-042A-02G.

NSSDC ID 65-042A-03

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.  
C.Y. FAN, U OF ARIZONA , TUCSON, ARIZ.  
G. GLOECKLER, U OF MARYLAND , COLLEGE PARK, MD.

DATE LAST USEFUL DATA RECORDED- 05/02/67

EXPERIMENT BRIEF DESCRIPTION

A CHARGED PARTICLE SOLID-STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY RANGE IS PROPORTIONAL TO  $Z^2/A$  FOR PROTONS 0.9 TO 190 MEV, 6.5 TO 15 MEV, 19 TO 90 MEV, AND 90 TO 190 MEV) AND CHARGE SPECTRA ( $Z/A$ ). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 3.3 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND WAS READ OUT ALONG WITH THE DETECTOR ACCUMULATIONS. THE EXPERIMENT PERFORMED NORMALLY UNTIL APRIL 21, 1966, AFTER WHICH SEVERAL PROBLEMS WITH THE INSTRUMENTATION DEVELOPED, CAUSING SPIKES IN THE COUNT RATE DATA, ESPECIALLY FOR THE LOWEST ENERGY CHANNEL. THE DATE OF TRANSMISSION OF THE LAST USEFUL INFORMATION WAS MAY 2, 1967.

DATA SET NAME- REDUCED ACCUMULATOR COUNT AND PULSE  
HEIGHT ANALYSIS DATA ON MAGNETIC TAPE

NSSDC ID 65-042A-03A

AVAILABILITY OF DATA SET- DATA AVAILABLE FROM EXPERIMENTER

TIME SPAN OF DATA- 05/25/65 TO 04/29/67

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED COUNT RATE AND PULSE HEIGHT ANALYSIS DATA ON FIFTEEN 7-TRACK MAGNETIC TAPES THAT ARE AVAILABLE FROM THE EXPERIMENTER. THE TAPES WERE WRITTEN ON AN IBM 7094 AT 556 BPI IN A BINARY FORMAT, ODD PARITY, WITH 36-BIT WORDS (SIX CHARACTERS PER WORD). THE DATA ARE TIME ORDERED FOR THE PERIOD FROM MAY 29, 1965, TO APRIL 29, 1967, AND CONTAIN NO ORBIT/ATTITUDE INFORMATION. EACH TAPE CONTAINS A NUMBER OF PHYSICAL RECORDS, EACH OF WHICH IS 804 WORDS (4824 CHARACTERS) LONG. EACH PHYSICAL RECORD CONTAINS SIX 134-WORD LOGICAL RECORDS. EACH TAPE CONTAINS TWO FILES. THE PREFERRED FORM OF THESE DATA IS AVAILABLE FROM NSSDC IN DATA SETS 65-042A-03C (PULSE HEIGHT DATA) AND 65-042A-03D (COUNT ACCUMULATION DATA).

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) ON  
MICROFILM

NSSDC ID 65-042A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/65 TO 05/02/67

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF MACHINE-GENERATED COUNT RATE PLOTS FOR THE TELESCOPE SENSOR COMBINATIONS (D1, D1D2 NOT D3, D1D2D3 NOT D4, AND D1D2D3D4), WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.9 TO 190 MEV, 6.5 TO 15 MEV, 19 TO 90 MEV, AND 90 TO 190 MEV. EACH PLOT GIVES THE COUNT RATE (LOGARITHMIC) VS TIME (DAY NUMBER) FOR ONE SOLAR

ROTATION. THE PLOTS ARE ON ONE REEL OF 35-MM MICROFILM THAT CONTAINS A TOTAL OF 108 PLOTS. THERE ARE 27 PLOTS FOR EACH OF THE FOUR SENSOR COMBINATIONS. THE TIME INTERVAL COVERED IS FROM SOLAR ROTATION NUMBER 1804 (MAY 29, 1965) THROUGH 1830 (MAY 2, 1967).

DATA SET NAME- REDUCED PULSE HEIGHT ANALYZER DATA ON  
MAGNETIC TAPE

NSSDC ID 65-042A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/65 TO 04/28/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 200 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 120 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA -- D1 AND D3 DETECTOR ELEMENT PULSE HEIGHTS (CORRESPONDING TO INCIDENT PROTON ENERGY THRESHOLDS OF 0.9 AND 19 MEV, RESPECTIVELY), TIME OF OBSERVATION, ORBIT NUMBER, AND DATA QUALITY INFORMATION. THE OUTPUT FROM THE TWO 128-CHANNEL ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR COUNT RATE DATA. THE PULSE HEIGHT DATA IN THIS DATA SET ARE A REFORMATTED AND PREFERRED VERSION OF THOSE IN DATA SET 65-042A-03A.

DATA SET NAME- REDUCED COUNT ACCUMULATION DATA ON  
MAGNETIC TAPE

NSSDC ID 65-042A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/65 TO 04/28/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED COUNT ACCUMULATIONS ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 204 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 120 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE ACCUMULATIONS -- C1, D1D2 NOT D3, C1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190 MEV, 6.5 TO 19 MEV, 19 TO 90 MEV, 90 TO 190 MEV, AND ABOUT 1 MEV. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION AND DATA QUALITY INFORMATION. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN, AND EACH

ACCUMULATION WAS ABOUT 40 SEC LONG. THE ACCUMULATION DATA IN THIS DATA SET ARE A REFORMATTED AND PREFERRED VERSION OF THOSE IN DATA SET 65-042A-03A.

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID 65-042A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- K.A. ANDERSON, U OF CALIFORNIA, BERK, BERKELEY, CALIF.  
C.H. PITT, U OF CALIFORNIA, BERK, BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 05/12/67

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, DESIGNED TO MEASURE FLUXES OF GEOMAGNETICALLY TRAPPED PARTICLES, CONSISTED OF A 7.6-CM-DIAMETER NEHER-TYPE IONIZATION CHAMBER AND TWO ANTON 223 GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1 AND 17 MEV, RESPECTIVELY. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS GREATER THAN 45 KEV SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A FULL ANGLE OF 61 DEG, AND ITS SPIN AXIS OF SYMMETRY MADE AN ANGLE OF 59.5 DEG WITH THE SPACECRAFT SPIN AXIS. GM TUBE A RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. GM TUBE B LOOKED DIRECTLY INTO SPACE THROUGH A HOLE IN THE SPACECRAFT SKIN. THE ACCEPTANCE CONE FOR GM TUBE B HAD A FULL ANGLE OF 38 DEG, AND ITS AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT SPIN AXIS. OMNIDIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. DIRECTIONALLY, IT RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 40 AND 500 KEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER WERE ACCUMULATED FOR 326.08 SEC AND READ OUT ONCE EVERY 327.68 SEC. COUNTS FROM GM TUBE A WERE ACCUMULATED FOR 39.36 SEC AND READ OUT SIX TIMES EVERY 327.68 SEC. COUNTS FROM GM TUBE B WERE ACCUMULATED FOR 39.36 SEC AND READ OUT FIVE TIMES EVERY 327.68 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH MAY 12, 1967, THE DATE OF THE LAST USEFUL DATA TRANSMISSION.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES ON TAPE

NSSDC ID 65-042A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/65 TO 01/03/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SIX 7-TRACK, BCD, 800-BPI TAPES THAT WERE SUBMITTED BY THE EXPERIMENTER. THE FIRST FILE ON EACH TAPE IS A 12-CHARACTER INDEX THAT IDENTIFIES THE ORIGINAL GSFC TAPE FROM WHICH THE DATA WERE TAKEN. FOLLOWING EACH INDEX ARE A VARIABLE NUMBER OF 1032-CHARACTER DATA RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER

LOGICAL RECORDS AND A 24-CHARACTER GROUP THAT AGAIN IDENTIFIES THE DATA WITH RESPECT TO THE ORIGINAL GSFC TAPE. EACH LOGICAL RECORD CONTAINS THE UT (DAY, HR, MIN, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL AND POLAR SOLAR ANGLES, SATELLITE SPIN PERIOD, AND A NUMBER OF PROCESSING ERROR FLAGS. THESE DATA, WHICH ARE NOT TIME ORDERED, COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM MAY 29, 1965, TO JANUARY 3, 1967.

DATA SET NAME- PLOTS OF COUNT RATES AND PULSE RATES VS  
TIME ON MICROFILM

NSSDC ID 65-042A-058

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/25/65 TO 01/01/66

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100 AND THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. THE DATA ARE TIME ORDERED AND CONTAIN NO EPHEMERIS INFORMATION. THE DATA COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM MAY 29, 1965, TO JANUARY 1, 1966.

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SPACECRAFT NAME- ERS 17

NSSDC ID 65-058C

OTHER NAMES- 1965-058C, ORS III 1

LAUNCH DATE- 07/20/65

DATE LAST SCIENTIFIC DATA RECORDED- 11/03/65

AGENCY- ARPA-USAF

SPACECRAFT WEIGHT IN ORBIT- 6.5 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 07/20/65 ORBIT PERIOD- 2634 MIN.

APOGEE-112200. KM ALT

PERIGEE- 192. KM ALT INCLINATION- 34.4 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE ENVIRONMENTAL RESEARCH SATELLITE 17 CARRIED A SET OF FIVE RADIATION DETECTORS DESIGNED TO MEASURE CHARGED PARTICLES, X RAYS, GAMMA RAYS, AND COSMIC RAYS IN THE NEAR-EARTH ENVIRONMENT. THE SATELLITE WAS LAUNCHED ON JULY 20, 1965, INTO A HIGHLY ELLIPTICAL ORBIT WHOSE INITIAL APOGEE AND PERIGEE ALTITUDES WERE 112,200 KM AND 192 KM. INITIAL LOCAL TIME OF APOGEE WAS 1630 HR. THE SATELLITE WAS SPIN STABILIZED WITH A SPIN RATE OF APPROXIMATELY 6 RPM. A 16-CHANNEL PAM/FM/PM TELEMETER USING A SUBCOMMUTATOR AND IRIG FM CHANNEL 5 WAS EMPLOYED. EACH CHANNEL WAS SAMPLED FOR 4.5 SEC EVERY 72 SEC. DATA COVERAGE WAS OBTAINED AT ABOUT AN 86 PERCENT LEVEL FOR THE INITIAL 4 WEEKS OF OPERATION AND AT ABOUT A 26 PERCENT LEVEL THEREAFTER UNTIL NOVEMBER 3, 1965, WHEN THE TRANSMITTER CEASED. APPROXIMATELY 1500 HR

OF DATA WERE OBTAINED.

EXPERIMENT NAME- CHARGED PARTICLE DETECTORS

NSSDC ID 65-058C-01

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CCRP

INVESTIGATORS- J.I. VETTE, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 11/03/65

EXPERIMENT BRIEF DESCRIPTION

DETECTORS SENSITIVE TO TRAPPED PARTICLES INCLUDED A LITHIUM-DRIFTED SILICON DEVICE FOR DETECTING ELECTRONS ABOVE 320 KEV AND PROTONS FROM 8 TO 21 MEV. A PLASTIC SCINTILLATION COUNTER FOR ELECTRONS ABOVE 100 KEV AND PROTONS FROM 3.5 TO 27 MEV, AND A SHIELDED SODIUM IODIDE SCINTILLATION COUNTER FOR ELECTRONS ABOVE 3.2 MEV AND PROTONS ABOVE 35 MEV. THE PULSE SIGNAL FROM EACH OF THE THREE DETECTORS WAS FED TO TWO INTEGRAL PULSE HEIGHT DISCRIMINATORS. THE PULSE OUTPUTS OF THE LOWER LEVEL DISCRIMINATORS MEASURED ELECTRONS, AND THOSE FROM THE HIGHER LEVEL DISCRIMINATORS MEASURED PROTONS. FOUR OF THE SIX OUTPUTS WERE FED SEPARATELY INTO TWO LOGARITHMIC COUNT RATE METERS, ONE FOR HIGH AND ONE FOR LOW COUNT RATES. THE LITHIUM AND SODIUM HIGH-LEVEL DISCRIMINATOR OUTPUTS WERE EACH FED INTO TWO SINGLE-RATE METERS. THE 10 ANALOG VOLTAGES FROM THE RATE METERS AND A QUASI-DIGITAL OUTPUT FROM THE LITHIUM HIGH-LEVEL DISCRIMINATOR WERE EACH TELEMETERED ON A SEPARATE CHANNEL AND SAMPLED FOR 4.5 SEC EVERY 72 SEC. THE LOW-COUNT-RATE CHANNEL FOR ELECTRONS GREATER THAN 3.2 MEV FAILED ON JULY 23, 1965. ALL OTHER CHANNELS OF THIS EXPERIMENT OPERATED UNTIL THE CESSATION OF TELEMETRY. ALL OF THESE DETECTOR SYSTEMS WERE OMNIDIRECTIONAL EXCEPT FOR THE PLASTIC SCINTILLATION COUNTER, WHICH HAD A CONICAL FIELD OF VIEW WITH A 45-DEG HALF ANGLE.

DATA SET NAME- MERGED COUNT RATES, 4.5-SEC AVERAGES AND  
0.5-SEC MEASUREMENTS ON TAPE

NSSDC ID 65-058C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/20/65 TO 11/03/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THIRTY-TWO 7-TRACK, 800-BPI, BCD TAPES WHICH CONTAIN IDENTIFICATION AND HEADER INFORMATION, TIME, SUBCARRIER FREQUENCY, DETECTOR COUNT RATES, FLAGS, ORBITAL COORDINATES, AND ALL OF THE RAW DATA SAMPLED 20 TIMES PER SECOND. THESE TAPES ALSO CONTAIN DATA SETS 65-058C-02A AND 65-058C-03A. THE DETECTOR COUNT RATES WERE OBTAINED BY AVERAGING OVER EACH 4.5-SEC SAMPLE OF EACH DETECTOR IN THE SATELLITE. THE EPHEMERIS DATA ALSO INCLUDE GEOMAGNETIC AND ECLIPTIC COORDINATES. THE BCD TAPE FORMAT CONSISTS OF EIGHT LOGICAL RECORDS PER PHYSICAL RECORD. EACH LOGICAL RECORD IS 120 CHARACTERS LONG. THE TIME PERIOD COVERED IS FROM 0849 UT ON JULY 20, 1965, TO 2332 UT ON NOVEMBER 3, 1965, WITH NUMEROUS TIME GAPS IN THE



INTERVAL. APPROXIMATELY 1500 HR OF DATA WERE ACQUIRED IN THIS TIME PERIOD.

DATA SET NAME- DETECTOR COUNT RATES PLOTTED VS TIME ON MICROFILM NSSDC ID 65-058C-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/20/65 TO 11/03/65

DATA SET BRIEF DESCRIPTION

THE DATA ARE ON ONE REEL OF 16-MM MICROFILM ALONG WITH TWO OTHER DATA SETS -- ORBIT PARAMETERS (DATA SET 65-058C-00E) AND HOUSEKEEPING DATA (DATA SET 65-058C-01C). THE COUNT RATES FOR ALL DETECTOR CHANNELS OF THE SATELLITE EXCEPT FOR THE QUASI-DIGITAL CHANNELS ARE PLOTTED VS UT. THE FOLLOWING MEASUREMENTS ARE INCLUDED -- (1) ELECTRONS GREATER THAN 100 KEV, (2) ELECTRONS GREATER THAN 320 KEV, (3) ELECTRONS GREATER THAN 3.2 MEV, (4) PROTONS 3.5 TO 27 MEV, (5) PROTONS 8 TO 21 MEV, (6) PROTONS GREATER THAN 35 MEV, (7) GAMMA RAYS 30 TO 100 KEV, (8) COSMIC-RAY PROTONS GREATER THAN 30 MEV, AND (9) SOLAR X RAYS 1 TO 14 A OR ELECTRONS ABOVE 40 KEV. THE MEASUREMENTS LISTED IN (7) AND (8) ARE DATA FROM EXPERIMENT 65-058C-03, AND THE MEASUREMENTS LISTED IN (9) ARE FROM EXPERIMENT 65-058C-02. EACH PLOT CONTAINS 15 HR OF DATA.

DATA SET NAME- HOUSEKEEPING DATA PLOTTED VS TIME ON MICROFILM NSSDC ID 65-058C-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/20/65 TO 11/03/65

DATA SET BRIEF DESCRIPTION

THE DATA ARE ON ONE REEL OF 16-MM MICROFILM ALONG WITH TWO OTHER DATA SETS -- ORBIT PARAMETERS (DATA SET 65-058C-00E) AND DETECTOR COUNT RATES (DATA SET 65-058C-01B). THE STRUCTURE TEMPERATURE, HIGH- AND LOW-FREQUENCY REFERENCE VALUES, AND THE SUN SENSOR OUTPUT FREQUENCY ARE PLOTTED VS UT. EACH PLOT INCLUDES 15 HR OF DATA.

EXPERIMENT NAME- X-RAY DETECTORS NSSDC ID 65-058C-02

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CORP

INVESTIGATORS- J.I. VETTE, NASA-GSFC, GREENBELT, MD.  
L.E. PETERSON, U OF CALIFORNIA, SD, LA JCLLA, CALIF.  
J.L. MATTESON, U OF CALIFORNIA, SD, LA JCLLA, CALIF.

DATE LAST USEFUL DATA RECORDED- 09/15/65

EXPERIMENT BRIEF DESCRIPTION

THREE EON 6213 GEIGER TUBES WERE MOUNTED ALONG THREE MUTUALLY PERPENDICULAR AXES. THE CONICAL FIELD OF VIEW OF EACH DETECTOR WAS APPROXIMATELY A 50-DEG HALF ANGLE. THE OUTPUTS OF THESE THREE DETECTORS WERE ADDED TOGETHER AND CONVERTED BY A LOGARITHMIC COUNT RATE METER INTO AN ANALOG VOLTAGE. A QUASI-DIGITAL OUTPUT FOR LOW RATES WAS OBTAINED BY MEASURING A SUMMED SCALE OF 4 AND SCALE OF 64. THE ANALOG AND QUASI-DIGITAL CHANNELS WERE SAMPLED FOR 4.5 SEC EVERY 72 SEC. THE DETECTOR SYSTEM WAS SENSITIVE TO SOLAR X RAYS IN THE 1- TO 14-A RANGE AND TO ELECTRONS ABOVE 40 KEV. THIS SYSTEM FAILED ON SEPTEMBER 15, 1965. THE SUM OF THE OUTPUT OF THE THREE ORTHOGONAL SOLAR CELLS, WITH THE SAME LOOK ANGLES AS THE DETECTORS, WAS USED TO GIVE CRUDE SOLAR ASPECT INFORMATION.

DATA SET NAME- MERGED COUNT RATES, 4.5-SEC AVERAGES AND  
0.5-SEC MEASUREMENTS ON TAPE

NSSDC ID 65-058C-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/20/65 TO 11/03/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS COMBINED WITH 65-058C-01A AND 65-058C-03A ON THIRTY-TWO 7-TRACK, 800-BPI, BCD TAPES. THE COUNT RATE SUM OF THE THREE GEIGER TUBES WAS OBTAINED BY AVERAGING OVER EACH 4.5-SEC SAMPLE. THE .05-SEC SAMPLES OF THE RAW DATA AND THE QUASI-DIGITAL CHANNEL ARE ALSO AVAILABLE. FOR THE TAPE FORMAT, SEE BRIEF DESCRIPTION 65-058C-01A. PLOTS OF THE DATA ARE CONTAINED IN DATA SET 65-058C-01B.

EXPERIMENT NAME- GAMMA-RAY DETECTOR

NSSDC ID 65-058C-03

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CORP

INVESTIGATORS- J.I. VETTE, NASA-GSFC, GREENBELT, MD.

L.E. PETERSON, U OF CALIFORNIA, SD, LA JCLLA, CALIF.

J.L. MATTESON, U OF CALIFORNIA, SD, LA JCLLA, CALIF.

DATE LAST USEFUL DATA RECORDED- 11/03/65

EXPERIMENT BRIEF DESCRIPTION

AN OMNIDIRECTIONAL PHOSWICH-TYPE SCINTILLATION COUNTER WAS USED TO MEASURE GAMMA RAYS BETWEEN 30 KEV AND 10 MEV AND ALSO TO PROVIDE A MEASURE OF THE TOTAL COSMIC-RAY FLUX FOR PRCTONS GREATER THAN 30 MEV. THE FIVE-LEVEL DIFFERENTIAL ANALYZER PROVIDED AN ENERGY LOSS SPECTRUM IN THE 0.03- TO 0.1-MEV, 0.1- TO 0.3-MEV, 0.3- TO 1-MEV, 1- TO 3-MEV, AND 3- TO 10-MEV RANGES. AN INTEGRAL DISCRIMINATOR PROVIDED A COSMIC-RAY CHANNEL FOR ENERGY

LOSSES ABOVE 10 MEV. THE LOWEST LEVEL CHANNEL WAS CONVERTED TO AN ANALOG VOLTAGE USING A LOGARITHMIC COUNT RATE METER. THIS CHANNEL WAS SAMPLED FOR 4.5 SEC EVERY 72 SEC. THE INTEGRAL COSMIC-RAY CHANNEL WAS CONVERTED TO AN ANALOG VOLTAGE IN A SIMILAR FASHION BUT WAS SAMPLED FOR 4.5 SEC EVERY 576 SEC. ALL OTHER CHANNELS WERE SCALED DOWN, AND THE SUMMED OUTPUT OF SCALERS WAS SAMPLED EVERY 576 SEC. THE CHARGED PARTICLE REJECTION FEATURE OF THE PHOSWICH CIRCUIT FAILED AT LAUNCH, AND THE INTEGRAL DISCRIMINATOR CHANNEL RATE DECREASED TO NEARLY ZERO BY AUGUST 5, 1965, BECAUSE OF AN AMPLIFIER SATURATION. THE INTERPRETATION OF THE DATA FROM THIS DETECTOR IS DIFFICULT BECAUSE OF THE VARIOUS MALFUNCTIONS.

DATA SET NAME- MERGED COUNT RATES, 4.5-SEC AVERAGES AND  
0.5-SEC MEASUREMENTS ON TAPE

NSSDC ID 65-058C-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/20/65 TO 11/03/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS COMBINED WITH 65-058C-01A AND 65-058C-02A ON THIRTY-TWO 7-TRACK, 800-BPI, BCD TAPES. THE COUNT RATES OF THE .03- TO .1-MEV CHANNEL AND THE GREATER THAN 10-MEV CHANNEL WERE OBTAINED BY AVERAGING OVER EACH 4.5-SEC SAMPLE. THE .05-SEC SAMPLES OF THE RAW DATA FROM THESE CHANNELS AND THE FOUR QUASI-DIGITAL CHANNELS ARE AVAILABLE. FOR THE TAPE FORMAT, SEE BRIEF DESCRIPTION 65-058C-01A. PLOTS OF A PORTION OF THE DATA ARE CONTAINED IN DATA SET 65-058C-01B.

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SPACECRAFT NAME- PEGASUS 3  
OTHER NAMES- 1565-060A

NSSDC ID 65-060A

LAUNCH DATE- 07/30/65 DATE LAST SCIENTIFIC DATA RECORDED- 08/31/69

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 1455 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 07/30/65 ORBIT PERIOD- 95.3 MIN.  
APOGEE- 540. KM ALT PERIGEE- 521. KM ALT INCLINATION- 28.9 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE MISSION OF THIS SPACECRAFT WAS TO MEASURE METEOROID ABUNDANCES OVER THE MASS RANGE 10 TO THE MINUS 7 TO 10 TO THE MINUS 4 GRAMS IN THE REGION NEAR THE EARTH. THE SPACECRAFT WAS EQUIPPED WITH WINGLIKE APPENDAGES THAT EXTENDED TO FORM A PLANE 29.3 M LONG BY 4.1 M WIDE. THESE WINGS CARRIED SENSITIVE PENETRATION SURFACES FOR THE EXPERIMENTS. ONE FM TRANSMITTER FAILED AFTER 3 MONTHS, BUT NO DATA WERE LOST. FOR THIS PEGASUS MISSION, THE ORBIT WAS ADJUSTED TO A NEARLY CIRCULAR ONE.

EXPERIMENT NAME- METEOROID PENETRATION DETECTORS

NSSDC ID 65-060A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-MSFC

INVESTIGATORS- R.J. NAUMANN, NASA-MSFC , HUNTSVILLE, ALA.  
K.S. CLIFTON, NASA-MSFC , HUNTSVILLE, ALA.

DATE LAST USEFUL DATA RECORDED- 08/31/69

EXPERIMENT BRIEF DESCRIPTION

THE METEOROID DETECTORS ON THIS EXPERIMENT WERE PARALLEL-PLATE CAPACITORS THAT TEMPORARILY DISCHARGED WHEN PENETRATED BY METEORIDS. A TOTAL OF 416 CAPACITORS FORMED 208 DETECTOR ASSEMBLIES, WHICH WERE LOCATED ON THE WINGS OF THE SPACECRAFT. THE TOTAL AREA OF THE DETECTORS WAS APPROXIMATELY 188 SQ M. THE OUTSIDE PLATES OF THE CAPACITORS WERE EITHER 0.4-, 0.2-, OR 0.04-MM-THICK ALUMINUM. THE THICKNESS PENETRATED PROVIDED INFORMATION ABOUT THE SIZE OF THE PENETRATING METEORIDS. PENETRATION TIMES WERE RECORDED TO AN ACCURACY OF 1 MIN. EXPERIMENT OPERATION WAS NORMAL.

DATA SET NAME- METEOROID PENETRATION DATA ON TAPE

NSSDC ID 65-060A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/30/65 TO 08/15/67

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA WERE PROVIDED BY THE EXPERIMENTER. THIS DATA SET IS AVAILABLE AS ONE TAPE CONTAINING APPROXIMATELY 4000 CARD IMAGES. THE TAPE WAS WRITTEN ON AN IBM 7094 IN EVEN PARITY, WITH 84 BCD CHARACTERS PER RECORD, AT A DENSITY OF 556 BPI. DATA FROM PEGASUS 1 (65-009A-01A) AND PEGASUS 2 (65-039A-01A) ARE ALSO CONTAINED ON THIS TAPE. LISTED FOR EACH PENETRATION ARE -- DATE, TIME, SIDE PENETRATED, PANEL PENETRATED, THICKNESS PENETRATED, LATITUDE AND LONGITUDE OF THE SPACECRAFT, AND EITHER SPACECRAFT HOUSEKEEPING DATA (E.G., TEMPERATURES, SPACECRAFT CLOCK) OR SPACECRAFT LOCATION IN EQUATORIAL AND ECLIPTIC COORDINATES. SEE 'PEGASUS METEOROID PENETRATION DETECTORS,' NSSDC DATA USERS' NOTE 69-15, BY G. FULLER AND M. BEELER.

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SPACECRAFT NAME- GEMINI 5  
OTHER NAMES- 156E-068A

NSSDC ID 65-068A

LAUNCH DATE- 08/21/65

DATE LAST SCIENTIFIC DATA RECORDED- 08/29/65

AGENCY- NASA-OMSF

SPACECRAFT WEIGHT IN ORBIT-

3180 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 08/24/65

ORBIT PERIOD- 89.4 MIN.

APOGEE- 303. KM ALT

PERIGEE- 197. KM ALT

INCLINATION- 32.6 DEGREES

SPACECRAFT BRIEF DESCRIPTION

GEMINI 5, MANNED WITH TWO ASTRONAUTS, WAS THE THIRD EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE CONICAL SHAPED SPACECRAFT WAS 3.05 M IN DIAMETER AT THE LARGEST END, WHICH WAS THE REAR OF THE CRAFT. THE MAJOR OBJECTIVES OF THIS MISSION WERE TO DEMONSTRATE (1) A LONG-DURATION MANNED FLIGHT USING A FUEL CELL POWER SYSTEM, (2) RENDEZVOUS CAPABILITIES, AND (3) RENDEZVOUS MANEUVERS. SCIENTIFIC STUDIES INCLUDED ZODIACAL LIGHT, SYNOPTIC TERRAIN, SYNOPTIC WEATHER PHOTOGRAPHY, AND A CLOUDTOP SPECTROMETER EXPERIMENT. IN ADDITION, FIVE MEDICAL AND SEVEN TECHNOLOGICAL EXPERIMENTS WERE PERFORMED DURING THE MISSION. THE 120-ORBIT FLIGHT LASTED 8 DAYS, RETURNING TO EARTH ON AUGUST 29, 1965. THE MISSION WAS CONSIDERED SUCCESSFUL.

EXPERIMENT NAME- ZODIACAL LIGHT PHOTOGRAPHY

NSSDC ID 65-068A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- E.P. NEY, U OF MINNESOTA , MINNEAPOLIS, MINN.

DATE LAST USEFUL DATA RECORDED- 08/29/65

EXPERIMENT BRIEF DESCRIPTION

A HAND-HELD CAMERA (F/1) EQUIPPED WITH AUTOMATIC TRIGGERING WAS USED BY GEMINI CREWMEN TO OBTAIN PHOTOGRAPHS OF AIRGLOW, ZODIACAL LIGHT, THE MILKY WAY, AND STAR FIELDS. THE CAMERA, WHICH WAS SPECIALLY CONSTRUCTED FOR THE EXPERIMENT, HAD A 50-DEG BY 130-DEG FIELD OF VIEW. A TRANSISTORIZED TIMER ON THE CAMERA WAS PROGRAMMED TO TAKE FRAMES IN A SEQUENCE IN WHICH THE EXPOSURE TIME STARTED AT 0.5 SEC, WAS DOUBLED, AND ENDED AT 3 MIN. THE SHUTTER WAS CLOSED FOR 20 SEC BETWEEN FRAMES TO ALLOW FOR SPACECRAFT REORIENTATION.

DATA SET NAME- ZODIACAL LIGHT PHOTOGRAPHY ON 35-MM FILM

NSSDC ID 65-068A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/21/65 TO 08/29/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM TRI-X NEGATIVES OF THE 16 EXPOSURES MADE ON GEMINI 5 AND IS AVAILABLE ON ONE REEL OF FILM TOGETHER WITH ZODIACAL LIGHT PHOTOGRAPHY FROM GEMINIS 9 AND 10. THE EXPOSURES MADE ON THIS FLIGHT SHOW AIRGLOW, ZODIACAL LIGHT, STAR FIELDS, AND APPARENT GEGENSCHIN. FOR FRAME

NUMBERS AND A BRIEF INDEX TO THE PHOTOGRAPHS. SEE NSSDC 70-08, 'DESCRIPTIVE INDEX TO GEMINI ZODIACAL LIGHT PHOTOGRAPHY.'

EXPERIMENT NAME- CLOUDTOP SPECTROMETER

NSSDC ID 65-068A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF MARYLAND

INVESTIGATORS- F. SAIEDY, IRAN

J.C. ALISHOUSE, NOAA-NESC , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 08/29/65

#### EXPERIMENT BRIEF DESCRIPTION

A HAND-HELD SPECTROGRAPH CAMERA WAS USED BY THE GEMINI 5 ASTRONAUTS TO PHOTOGRAPH CLOUDS AND, SIMULTANEOUSLY, TO RECORD AN IMAGE OF THE SPECTRUM OF SUNLIGHT REFLECTED FROM THESE CLOUDS IN THE WAVELENGTH INTERVAL FROM 7500 Å TO 7800 Å. THE SPECTRA WERE RECORDED ON HIGH-SPEED INFRARED FILM. THE PURPOSE OF THE EXPERIMENT WAS TO DEDUCE THE CLOUDTOP HEIGHTS FROM THE ABSORPTION OF LIGHT BY THE OXYGEN Å BAND, WHICH IS CENTERED AT 7619 Å. BY COMPARING THE RADIANCE AT A CERTAIN WAVELENGTH WITHIN THE BAND (7631 Å FOR LOW- AND MEDIUM-LEVEL CLOUDS, 7606 Å FOR HIGH CLOUDS) TO THE RADIANCE IN AN ATMOSPHERIC WINDOW OUTSIDE THE BAND, THE TRANSMITTANCE OF OXYGEN IN THE ATMOSPHERE ABOVE THE CLOUD WAS OBTAINED. (THE TRANSMITTANCE OF OXYGEN IS A FUNCTION OF THE PRESSURE ALTITUDE OF THE CLOUD.) THE INSTRUMENT FUNCTIONED WELL AND WAS OPERATED PROPERLY. TWENTY-SIX GOOD PHOTOGRAPH-SPECTROGRAMS WERE OBTAINED.

DATA SET NAME- CLOUDTOP PHOTOGRAPH-SPECTROGRAMS ON FILM

NSSDC ID 65-068A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/21/65 TO 08/29/65

#### DATA SET BRIEF DESCRIPTION

THIS ORIGINAL DATA SET OF THE GEMINI 5 CLOUDTOP SPECTROMETER EXPERIMENT CONSISTS OF 26 PHOTOGRAPHS ON A SHORT REEL OF 35-MM FILM. EACH PHOTOGRAPH CONTAINS AN IMAGE OF BOTH A CLOUD AND THE SPECTRUM OF THIS CLOUD IN THE INTERVAL FROM 7500 Å TO 7800 Å. THESE 26 PHOTOGRAPHS WERE TAKEN OVER VARIOUS LOCATIONS AND AT VARIOUS TIMES DURING THE 8-DAY FLIGHT, AUGUST 21 TO 29, 1965. TO USE THESE DATA, A DENSITOMETER IS NEEDED TO MEASURE THE OPTICAL DENSITY ACROSS THE IMAGE OF THE SPECTRUM. THE OPTICAL DENSITY IS PROPORTIONAL TO THE RADIANCE. BY COMPARING THE RADIANCE FROM THE OXYGEN Å BAND NEAR 7600 Å TO THE RADIANCE IN AN ATMOSPHERIC WINDOW REGION, A RATIO IS OBTAINED THAT IS PROPORTIONAL TO THE TRANSMITTANCE OF THE OXYGEN IN THE ATMOSPHERE ABOVE THE CLOUD. FROM THIS PARAMETER, THE CLOUDTOP PRESSURE ALTITUDE CAN BE COMPUTED.

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SPACECRAFT NAME- OV1-2  
OTHER NAMES- SATAR, 1965-078A

NSSDC ID 65-078A

LAUNCH DATE- 10/05/65 DATE LAST SCIENTIFIC DATA RECORDED- 04/00/67

AGENCY- USAF SPACECRAFT WEIGHT IN ORBIT- 88 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 10/06/65 ORBIT PERIOD- 125.6 MIN.  
APOGEE- 3462. KM ALT PERIGEE- 403. KM ALT INCLINATION- 144.3 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT CARRIED INSTRUMENTATION FOR THE STUDY OF ENERGETIC PARTICLE FLUXES AND SPECTRA AND THE RESULTING DOSE RATES. A MAJOR OBJECTIVE OF THE EXPERIMENT PACKAGE WAS TO OBTAIN DATA WITH WHICH TO CHECK APPROXIMATIONS MADE IN THEORETICAL DOSE CALCULATIONS. THE SPACECRAFT HAD A SLOWLY VARYING TUMBLE PERIOD OF TENS OF SECONDS. SPACECRAFT PERFORMANCE INITIALLY WAS NORMAL. HOWEVER, THE ONBOARD CLOCK AND THE TAPE RECORDER FAILED ON DECEMBER 1, 1965, AND ON JANUARY 13, 1966, RESPECTIVELY. LIMITED REAL-TIME OPERATIONS WERE CARRIED OUT UNTIL TOTAL SPACECRAFT FAILURE IN APRIL 1967.

DATA SET NAME- EPHEMERIS DATA ON TAPE

NSSDC ID 65-078A-000

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/05/65 TO 12/01/65

DATA SET BRIEF DESCRIPTION

THE SIX OV1-2 EPHEMERIS TAPES ARE UNBLOCKED, 7-TRACK, 556-BPI, BINARY MAGNETIC TAPES WRITTEN IN FORTRAN IV ON AN IBM 7094. EXCEPT FOR IDENTIFICATION RECORDS, EACH LOGICAL RECORD CONTAINS TIME, SPACECRAFT LATITUDE, LONGITUDE, AND ALTITUDE, AND SUCH COMPUTED QUANTITIES AS MAGNETIC FIELD MAGNITUDE AND COMPONENTS, L VALUE, AND INVARIANT LATITUDE. THE TIME COVERAGE IS NEARLY IDENTICAL TO THAT OF THE UCLA PARTICLE EXPERIMENT (DATA SET 65-078A-02A), I.E., 25 PERCENT OF THE INTERVAL OCTOBER 5, 1965, TO DECEMBER 1, 1965. THESE TAPES WERE PROVIDED TO NSSDC BY DR. T. FARLEY, UCLA.

EXPERIMENT NAME- ELECTRON AND PROTON DETECTORS

NSSDC ID 65-078A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

INVESTIGATORS- T.A. FARLEY, U OF CALIFORNIA, LA , LOS ANGELES, CALIF.

DATE LAST USEFUL DATA RECORDED- 12/01/65

EXPERIMENT BRIEF DESCRIPTION

DIRECTIONAL FLUXES OF ELECTRONS WERE MEASURED BY A CSI SCINTILLATOR ATTACHED TO AN RCA 4439 PHOTOMULTIPLIER TUBE. A PLASTIC ANTICOINCIDENCE SCINTILLATOR SURROUNDED THIS DETECTOR. THE ANODE OUTPUT YIELDED COUNT RATES OF ELECTRONS ABOVE 560 KEV. EIGHT-CHANNEL PULSE HEIGHT ANALYSIS WAS APPLIED TO THE LAST DYNODE PULSE FOR EACH APPROPRIATE INCIDENT PARTICLE. A DYNODE OUTPUT GAIN LOSS SHIFTED THE MEASURABLE ELECTRON ENERGIES UPWARD SO THAT ONLY THE LOWEST FIVE CHANNELS YIELDED USEFUL INFORMATION. THE ELECTRON ENERGY RANGE 1.2 TO 4.7 MEV WAS COVERED BY THESE FIVE CHANNELS. ALL LOCAL PITCH ANGLES WERE SAMPLED DURING EACH SPACECRAFT SPIN PERIOD. EXCEPT FOR THE DYNODE GAIN LOSS, THE DETECTOR WORKED WELL FROM LAUNCH UNTIL DECEMBER 1, 1965, WHEN THE ONBOARD CLOCK MALFUNCTIONED. TWO PLASTIC SCINTILLATORS MEASURED THE DIRECTIONAL FLUXES OF PROTONS WITH ALL LOCAL PITCH ANGLES AND IN THE ENERGY INTERVALS 10 TO 23 MEV AND 22 TO 50 MEV. THE DETECTORS FUNCTIONED NORMALLY OVER THE 18-MONTH PERIOD OF DATA TRANSMISSION ALTHOUGH DATA AND EPHEMERIS ARE AVAILABLE ONLY BETWEEN OCTOBER 5, 1965, AND DECEMBER 1, 1965. THE EXPERIMENT PACKAGE ALSO CONTAINED A FOUR-CHANNEL PROTON SPECTRUM ANALYZER THAT PRODUCED NO USEFUL INFORMATION. A COMPLETE DATA SAMPLING SEQUENCE REQUIRED 2 SEC. THIS SEQUENCE INCLUDED FOUR READINGS EACH OF THE FLUXES OF ELECTRONS ABOVE 560 KEV AND OF PROTONS BETWEEN 10 AND 23 MEV AND BETWEEN 22 AND 50 MEV AND ONE READING OF EACH ELECTRON AND PROTON PULSE HEIGHT ANALYSIS CHANNEL. THE DATA WERE TRANSMITTED OVER TELEMETRY CHANNELS 15 AND 16 (ELECTRON AND PROTON DATA, EACH TYPE IN BOTH CHANNELS).

DATA SET NAME- REDUCED PROTON AND ELECTRON COUNT RATES  
AND PULSE HEIGHT DATA ON TAPE

NSSDC ID 65-078A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/05/65 TO 12/01/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO SUBSETS OF 7-TRACK, 556-BPI, BCD MAGNETIC TAPE GENERATED BY THE EXPERIMENTER. REDUCED DATA FOR CHANNELS 15 AND 16 ARE RECORDED ON 44 AND 35 TAPES, RESPECTIVELY. EACH SUBSET IS NEARLY COMPLETELY TIME ORDERED. TAKEN TOGETHER, THE TAPES CONTAIN ELECTRON AND PROTON EVENT COUNT RATES (FOUR FOR EACH DETECTOR) AND ELECTRON AND PROTON SPECTROMETER OUTPUTS FOR EACH 2-SEC INTERVAL. DOSIMETRY AND X-RAY INFORMATION FROM OTHER EXPERIMENTS IS ALSO FOUND ON THE TAPES. NO EPHEMERIS INFORMATION IS INCLUDED, BUT THIS IS AVAILABLE AS DATA SET 65-078A-00C. TIME COVERAGE RUNS FROM OCTOBER 5, 1965, TO DECEMBER 1, 1965, WITH ABOUT 25 PERCENT COMPLETENESS. A NEW SET OF TAPES, ON WHICH CHANNEL 15 AND 16 DATA AND EPHEMERIS DATA HAVE BEEN MERGED, IS AVAILABLE AS DATA SET 65-078A-02C.

DATA SET NAME- L-ORDERED PERPENDICULAR, OMNIDIRECTIONAL  
ELECTRON FLUX ON MICROFILM

NSSDC ID 65-078A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED



TIME SPAN OF DATA- 10/00/65 TO 11/00/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPUTER LISTING ON A SINGLE REEL OF 16-MM MICROFILM. THE LISTING INCLUDES THE PERPENDICULAR AND OMNIDIRECTIONAL FLUXES OF ELECTRONS GREATER THAN 560 KEV VS COMPUTED MAGNETIC FIELD MAGNITUDE AT ABOUT 12 DISCRETE L VALUES BETWEEN 1.18 AND 1.75. THE FLUX VALUES ARE THOSE DERIVED BY THE EXPERIMENTER USING THE APPROPRIATE DATA FROM DATA SET 65-078A-02A.

DATA SET NAME- REDUCED PARTICLE DATA MERGED WITH  
EPHEMERIS DATA ON TAPE

NSSDC ID 65-078A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/05/65 TO 12/01/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES GENERATED AT NSSDC. EACH PHYSICAL RECORD CONTAINS THIRTY 32-WORD LOGICAL RECORDS. FROM THE TAPES OF CHANNELS 15 AND 16 (DATA SET 65-078A-02A), THE GOOD DATA VALUES FROM THE UCLA PARTICLE DETECTORS WERE TAKEN FOR CORRESPONDING 2-SEC TELEMETRY SEQUENCES AND WERE MERGED WITH EPHEMERIS DATA FROM DATA SET 65-078A-00D. THUS, EACH LOGICAL RECORD OF 65-078A-02C CONTAINS TIME, FOUR SUCCESSIVE COUNT RATES FOR ELECTRONS ABOVE 560 KEV AND FOR PROTONS BETWEEN 10 AND 23 MEV AND 22 AND 50 MEV, ONE COUNT RATE FOR EACH OF THE FIVE ELECTRON PULSE HEIGHT ANALYSIS CHANNELS, SPACECRAFT LATITUDE, LONGITUDE, AND ALTITUDE, AND COMPUTED VALUES OF MAGNETIC FIELD (TOTAL MAGNITUDE AND COMPONENTS), L VALUE, AND INVARIANT LATITUDE.

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SPACECRAFT NAME- OGO 2

NSSDC ID 65-081A

OTHER NAMES- OGO-C, POGO 1, S 50, 1965-081A

LAUNCH DATE- 10/14/65

DATE LAST SCIENTIFIC DATA RECORDED- 11/01/67

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

520 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 10/15/65

ORBIT PERIOD- 104 MIN.

APOGEE- 1510. KM ALT

PERIGEE- 414. KM ALT

INCLINATION- 87.356 DEGREES

SPACECRAFT BRIEF DESCRIPTION

OGO 2 WAS A LARGE OBSERVATORY INSTRUMENTED WITH EXPERIMENTS DESIGNED TO MAKE SIMULTANEOUS, CORRELATIVE OBSERVATIONS OF AURORA AND AIRGLOW EMISSIONS, ENERGETIC PARTICLES, MAGNETIC FIELD VARIATIONS, IONOSPHERIC PROPERTIES, ETC., ESPECIALLY OVER THE POLAR AREAS. OGO 2 CONSISTED OF A MAIN BODY, GENERALLY PARALLELEPIPED IN FORM, TWO RECTANGULAR SOLAR PANELS

EACH INCLUDING A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). THE MAIN BODY WAS ATTITUDE CONTROLLED BY USE OF HORIZON SCANNERS AND GAS JETS AND WAS DESIGNED TO POINT TOWARD THE EARTH (+Z AXIS). THE AXIS CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS DESIGNED TO OSCILLATE IN ORDER TO REMAIN PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS, ACTIVATED BY SUN SENSORS, COULD ROTATE ABOUT THIS X AXIS IN ORDER TO OBTAIN MAXIMUM RADIATION FOR THE SOLAR CELLS AND CONCURRENTLY ORIENT THE SCEP PROPERLY. THE OPEP'S WERE MOUNTED ON EITHER END OF AN AXIS THAT WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE FORWARD END OF THE MAIN BODY. THE OPEP SENSORS NORMALLY WERE MAINTAINED LOOKING FORWARD IN THE ORBITAL PLANE OF THE SATELLITE. IN ORDER TO MAINTAIN THIS ORIENTATION, THE OPEP AXIS COULD ROTATE OVER 90 DEG. IN ADDITION, AN ANGULAR DIFFERENCE OF OVER 90 DEG WAS POSSIBLE BETWEEN THE ORIENTATION OF THE UPPER AND LOWER OPEP PACKAGES. THE SOEP CONTAINED FOUR EXPERIMENTS, AND THE OPEP CONTAINED FIVE EXPERIMENTS. A PARTICLE EXPERIMENT FAILED ON LAUNCH, AND A SOLAR X-RAY EXPERIMENT FAILED SHORTLY AFTER LAUNCH. SOON AFTER THE SPACECRAFT ACHIEVED ORBIT, DIFFICULTIES IN MAINTAINING EARTH LOCK WITH HORIZON SCANNERS CAUSED EXHAUSTION OF ATTITUDE CONTROL GAS 10 DAYS AFTER LAUNCH. AT THIS TIME, THE SPACECRAFT ENTERED A SPIN MODE (ABOUT 0.11 RPM) WITH A LARGE CONING ANGLE ABOUT THE PREVIOUSLY VERTICAL AXIS. FIVE EXPERIMENTS BECAME USELESS WHEN THE SATELLITE WENT INTO THIS SPIN MODE, AND SIX OTHER EXPERIMENTS WERE DEGRADED BY THE LOSS OF ATTITUDE CONTROL. BY APRIL 1966, BOTH SPACECRAFT BATTERIES HAD FAILED SO THAT OBSERVATIONS WERE LIMITED TO SUNLIT PORTIONS OF THE ORBIT. BY DECEMBER 1966, ONLY EIGHT EXPERIMENTS WERE OPERATIONAL, FIVE OF WHICH WERE NOT DEGRADED BY THE SPIN MODE OPERATION. BY APRIL 1967, THE TAPE RECORDERS HAD MALFUNCTIONED SO THAT ONLY ONE THIRD OF THE RECORDED DATA COULD BE PROCESSED. THE SPACECRAFT WAS SHUT DOWN IN NOVEMBER 1967 WITH EIGHT EXPERIMENTS STILL OPERATIONAL.

DATA SET NAME- GSFC EXTENDED MASTER ORBIT WORLD MAPS ON  
MICROFILM

NSSDC ID 65-081A-00C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/14/65 TO 10/03/67

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITION AND SUPPORTING INFORMATION FOR EACH MINUTE OF GMT. THE INFORMATION PROVIDED IN THESE LISTINGS INCLUDES GEOCENTRIC POSITION, INERTIAL POSITION, DEFINITION OF SATELLITE VELOCITY VECTOR, AND SATELLITE POSITION IN THE MAGNETIC DIPOLE FIELD AND IN THE MAGNETIC (MCILWAIN) MODEL FIELD. THE DATA ARE AVAILABLE ON SIXTEEN 100-FT REELS OF 16-MM MICROFILM.

EXPERIMENT NAME- VLF RECEIVERS -- WIDE BAND, NARROW  
BAND, STEP FREQUENCY, AND TUNABLE

NSSDC ID 65-081A-02

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- R.A. FELLIWELL, STANFORD U , PALO ALTO, CALIF.  
L.H. RORDEN, STANFORD U , PALO ALTO, CALIF.  
J.J. ANGERAMI, STANFORD U , PALO ALTO, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/--/67

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF FIVE VLF RADIO RECEIVERS THAT STUDIED NATURAL AND MAN-MADE VLF NOISE OCCURRENCES AT ORBITAL ALTITUDES. THE RECEIVER SYSTEMS CONSISTED OF AN INFLATABLE 2.9-M-DIAMETER LOOP ANTENNA, A PREAMPLIFIER STAGE AT THE END OF A LONG BOOM, AND A RECEIVER ELECTRONICS PACKAGE IN THE MAIN BODY OF THE SATELLITE. THREE STEP-FREQUENCY RECEIVERS, COVERING FREQUENCY RANGES OF .2 TO 1.6, 1.6 TO 12.5, AND 12.5 TO 100 KHZ. EACH OBSERVED A COMPLETE SPECTRUM OF 256 SIGNAL STRENGTH VALUES ONCE EVERY 4.6, 18.4, OR 73.7 SEC DEPENDING UPON THE SELECTED MODE OF OPERATION. OBSERVATIONS FROM THESE THREE RECEIVERS WERE TAPE RECORDED AT 1 KBS OR OBSERVED IN REAL TIME AT 4, 16, OR 64 KBS. THE TAPE WAS READ OUT AT THE 64-KBS RATE UPON COMMAND. THE FOURTH RECEIVER OPERATED BETWEEN 14.4 AND 26.3 KHZ AND WAS TUNED BY COMMAND TO RECEIVE SIGNALS FROM ANY VLF RECEIVER TRANSMITTING IN THIS RANGE. SIGNAL PHASE AND AMPLITUDE WERE OBSERVED TWICE IN EACH MAIN COMMUTATOR FRAME, MAKING AVAILABLE 512 OBSERVATIONS OF PHASE AND AMPLITUDE EVERY 4.6, 18.4, OR 73.7 SEC DEPENDING ON THE MODE OF OPERATION. THESE DATA WERE RECORDED AND TRANSMITTED IN THE SAME WAY AS THE DATA FOR THE OTHER STEP-FREQUENCY RECEIVERS. THE FIFTH RECEIVER WAS A BROADBAND RECEIVER OPERATING BETWEEN .3 AND 12.5 KHZ. THE DATA FROM THIS RECEIVER WERE OBSERVED ONLY IN REAL TIME ON A SPECIAL PURPOSE TELEMETRY CHANNEL. DATA FROM THE FOUR STEP-FREQUENCY RECEIVERS WERE OBTAINED FOR ABOUT ONE THIRD OF THE APPROXIMATELY 2 YR OF SPACECRAFT OPERATION. THE WIDE-BAND DATA OBSERVATIONS COVERED ONLY A VERY SMALL PORTION OF THE SATELLITE LIFETIME DUE TO THE LIMITATION OF REAL-TIME OPERATION ONLY AND DIFFICULTIES EXPERIENCED WITH THE SPACECRAFT POWER.

DATA SET NAME- LOW-RESOLUTION VLF SPECTROGRAMS ON 35-MM  
PAPER

NSSDC ID 65-081A-028

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/16/65 TO 09/02/66

DATA SET BRIEF DESCRIPTION

THESE SPECTROGRAMS ARE REDUCED DATA PLOTS PRODUCED BY RAYSPAN EQUIPMENT ON 226 35-MM ROLLS OF PAPER. THEY SHOW, FOR EACH STATION PASS RECORDED, THE TIME OF SIGNAL OCCURRENCE VS FREQUENCY OF THE RECEIVED VLF SIGNAL. RELATIVE SIGNAL STRENGTH CAN BE QUALITATIVELY ESTIMATED BY CONTRAST BETWEEN THE BACKGROUND AND THE SIGNAL TRACES. THESE DATA ARE IN AN ORIGINAL FORM THAT WAS PREPARED DIRECTLY FROM THE FIRST TWO CHANNELS OF THE SPECIAL PURPOSE TELEMETRY TAPES. THEY ARE RECORDS OF SIGNALS RECEIVED BY THE 0.3- TO 12.5-KHZ BROADBAND RECEIVER AND TRANSMITTED IN REAL TIME WHEN THE SATELLITE WAS IN RANGE OF A TELEMETRY STATION. DATA SET REQUIREMENTS, BASED UPON DATA ANTICIPATED TO BE MOST USEFUL, WERE MESHED WITH SPACECRAFT POWER AND ORBIT CHARACTERISTICS IN ORDER TO SCHEDULE OBSERVATION TIMES. THESE ARE LOW-RESOLUTION DATA THAT HAVE BEEN PHOTOGRAPHED ON THE RAYSPAN EQUIPMENT WITH LOW PAPER TRANSPORT SPEEDS. THE PRIMARY USE FOR THIS DATA FORM IS IN IDENTIFICATION OF DATA THAT MAY PROVIDE INTERESTING CASES FOR STUDY WITH HIGHER RESOLUTION PROCESSING OF THE SAME DATA. THE ORIGINAL TAPES AND PROCESSING AT VARIOUS TRANSPORT SPEEDS ARE AVAILABLE THROUGH THE DATA SET CONTACT, DR. J. KATSUFRAKIS, AT STANFORD UNIVERSITY. SINCE ONLY TIME IS

NOTED ON THE SONOGRAMS. SATELLITE POSITION AND OTHER RELATED INFORMATION MUST BE OBTAINED FROM THE WORLD MAPS. (SEE DATA SET 65-081A-00C.)

EXPERIMENT NAME- RUBIDIUM VAPOR MAGNETOMETER

NSSDC ID 65-081A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- J.C. CAIN, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 10/02/67

#### EXPERIMENT BRIEF DESCRIPTION

THE PRIMARY OBJECTIVES OF THIS EXPERIMENT WERE TO REFINE THE THEN AVAILABLE ANALYTICAL DESCRIPTION OF THE MAIN GEOMAGNETIC FIELD (AS PART OF THE U.S. CONTRIBUTION TO THE WORLD MAGNETIC SURVEY) AND TO MEASURE THE SECULAR CHANGE IN THE MAIN FIELD. THE DETECTOR SYSTEM CONSISTED OF TWO DUAL-CELL, OPTICALLY PUMPED, SELF-OSCILLATING, RUBIDIUM (85) VAPOR MAGNETOMETERS. THE OSCILLATION FREQUENCY OF THE SYSTEM WAS DIRECTLY PROPORTIONAL TO THE MAGNITUDE OF THE AMBIENT MAGNETIC FIELD. THIS FREQUENCY WAS COUNTED BY TWO ELECTRONIC SCALERS FOR ALTERNATE HALF SECONDS. EACH SCALER WAS READ OUT ONCE IN EACH MAIN FRAME (ONE ABOUT HALF WAY THROUGH AND THE OTHER TOWARDS THE END). SINCE THE SPACECRAFT OPERATED AT 4 KBS, 16 KBS, OR 64 KBS, THE MAIN FRAME WAS READ OUT IN 0.288, 0.072, OR 0.018 SEC. BECAUSE OF THE RATE DIFFERENCE BETWEEN THE HALF-SECOND SAMPLING TIMES AND THE TIMES BETWEEN READOUTS, THE SAME DATA POINT WAS OFTEN READ OUT MORE THAN ONCE. IN ADDITION TO THE DIGITIZED FIELD DATA, VARIOUS ENGINEERING DATA WERE TELEMETERED TO THE GROUND BY THE EXPERIMENT. THE OSCILLATION FREQUENCY OF THE MAGNETOMETER WAS ALSO TRANSMITTED IN REAL TIME ON ONE CHANNEL OF THE SPACECRAFT'S SPECIAL PURPOSE TELEMETER TO PROVIDE INFORMATION ON FIELD FLUCTUATIONS. THIS MAGNETOMETER SYSTEM MADE SCALAR MEASUREMENTS OVER A RANGE OF 15,000 TO 64,000 GAMMAS AND HAD AN ACCURACY OF 0.5 TO 1.5 GAMMAS OVER THIS RANGE. IN SPITE OF THE SPACECRAFT ATTITUDE CONTROL SYSTEM PROBLEMS, THE MAGNETOMETER FUNCTIONED WELL. THE INSTRUMENT OPERATION WAS NOMINAL FOR THE FIRST 6 MONTHS OF THE SATELLITE LIFETIME, AFTER WHICH A FAILURE OF ONE SCALAR POWER SUPPLY CAUSED LOSS OF THE SPECIAL PURPOSE TELEMETRY SIGNAL AND HALF OF THE DIGITAL DATA. THE REDUCTION IN THE SCIENTIFIC USEFULNESS OF THE DATA RECEIVED FROM THE REMAINING SCALER WAS MINOR. HOWEVER, BECAUSE OF THE REDUNDANCIES BUILT INTO THE SYSTEM. THE REST OF THE DATA FROM THE MAGNETOMETER WERE OBTAINED WITH THE REMAINING SCALER UNTIL MAY 1967 AND THEN FROM THE INTERVAL SEPTEMBER 19 TO OCTOBER 2, 1967, DURING WHICH TIME DATA COLLECTION WAS VERY INTERMITTENT.

DATA SET NAME- UNCOMPRESSED 0.5-SEC MAGNETIC FIELD  
AVERAGES ON TAPE

NSSDC ID 65-081A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/14/65 TO 12/30/66

#### DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF 0.5-SEC

AVERAGES OF THE MAGNETIC FIELD MAGNITUDE EVERY 0.5 SEC OR EVERY 1 SEC. NO EPHEMERIS INFORMATION IS INCLUDED. THE INFORMATION IS CONTAINED ON TEN 7-TRACK, 800-BPI, BINARY MAGNETIC TAPES THAT WERE PRODUCED ON AN IBM 7094. EACH FILE CONTAINS ALL THE GOOD DATA FROM A PARTICULAR DAY, AND EACH RECORD IS 200 WORDS LONG. THE DATA ARE TIME ORDERED, AND TIME IS EXPRESSED IN JULIAN DAY AND FRACTION OF THE JULIAN DAY.

DATA SET NAME- MICROFILM PLOTS OF REDUCED MAGNETIC AND  
DELTA FIELD (CAIN 12/66 GSFC MODEL) DATA

NSSDC ID 65-081A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/14/65 TO 01/22/66

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE AND PLOTS OF THE DIFFERENCE BETWEEN THE MEASURED FIELD AND THE CAIN (12/66) GSFC FIELD MODEL. APOGEE, PERIGEE, TIME, LONGITUDE, LATITUDE, AND SATELLITE ALTITUDE ARE MARKED ON EACH PLOT. THERE ARE SIX TIMES AND NINE LATITUDES, ALTITUDES, AND LONGITUDES INDICATED ON EACH PLOT. EACH PLOT COVERS 1.5 HR. OR ABOUT ONE ORBIT. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM AND HAVE AN 80 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

DATA SET NAME- MICROFILM PLOTS OF REDUCED MAGNETIC AND  
DELTA FIELD (CAIN 10/68 POGC MODEL) DATA

NSSDC ID 65-081A-05F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/14/65 TO 10/02/67

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE AND PLOTS OF THE DIFFERENCE BETWEEN THE MEASURED FIELD AND THE CAIN POGC (10/68) GSFC FIELD MODEL. APOGEE, PERIGEE, TIME, LONGITUDE, LATITUDE, AND SATELLITE ALTITUDE ARE MARKED ON EACH PLOT. THERE ARE SIX TIMES AND NINE LATITUDES, ALTITUDES, AND LONGITUDES INDICATED ON EACH PLOT. EACH PLOT COVERS 1.5 HR. OR ABOUT ONE ORBIT. THE DATA ARE CONTAINED ON TWO REELS OF 35-MM MICROFILM AND HAVE AN 80 PERCENT COVERAGE FOR THE FOLLOWING TIME PERIODS -- OCTOBER 14, 1965, TO OCTOBER 24, 1965, OCTOBER 29, 1965, TO APRIL 2, 1966, JUNE 11, 1966, TO JUNE 12, 1966, JUNE 29, 1966, TO AUGUST 4, 1966, NOVEMBER 22, 1966, TO DECEMBER 22, 1966, APRIL 11, 1967, TO MAY 8, 1967, AND SEPTEMBER 19, 1967, TO OCTOBER 2, 1967.

DATA SET NAME- COMPRESSED 0.5-SEC REDUCED MAGNETIC  
FIELD AVERAGES ON TAPE

NSSDC ID 65-081A-05G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/14/65 TO 10/02/67

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE EVERY 0.5 SEC OR EVERY 1 SEC. NO EPHEMERIS INFORMATION IS INCLUDED. THE DATA ARE CONTAINED ON FOUR 7-TRACK, 800-BPI, BINARY MAGNETIC TAPES. THESE TAPES WERE PRODUCED ON AN IBM 7094. THE DATA ON EACH TAPE ARE CONTAINED IN ONE FILE OF VARIABLE-LENGTH RECORDS. THE DATA ARE TIME ORDERED, AND TIME IS EXPRESSED IN JULIAN DAY AND MSEC OF THE JULIAN DAY. A FORTRAN IV PROGRAM IS AVAILABLE TO COMPUTE THE DIFFERENCE BETWEEN THE OBSERVED FIELD AND EITHER THE GEOMAGNETIC FIELD MODEL THAT USES THE POGO 10/68 COEFFICIENTS OR THE MODEL THAT USES THE GSFC 12/66 COEFFICIENTS. THE COEFFICIENTS AND THE EPHEMERIS TAPE REQUIRED FOR THIS PROGRAM ARE AVAILABLE. THE EPHEMERIS TAPE IS 7-TRACK, BINARY, WRITTEN AT 556 BPI AND PRODUCED ON A 7054. IT CONTAINS ONE FILE.

DATA SET NAME- 0.5-SEC AVERAGES OF MAGNETIC FIELD  
MAGNITUDE SAMPLED EVERY 10 SEC ON TAPE

NSSDC ID 65-081A-05H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/14/65 TO 10/02/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE EVERY 10 SEC. NO EPHEMERIS INFORMATION IS INCLUDED. THE DATA ARE CONTAINED ON ONE 7-TRACK, 800-BPI, BINARY MAGNETIC TAPE. THIS TAPE WAS PRODUCED ON AN IBM 7094. THE DATA ARE CONTAINED IN ONE FILE OF VARIABLE-LENGTH RECORDS. THE DATA ARE TIME ORDERED, AND TIME IS EXPRESSED IN JULIAN DAY AND MSEC OF THE JULIAN DAY. A FORTRAN IV PROGRAM IS AVAILABLE TO COMPUTE THE DIFFERENCE BETWEEN THE OBSERVED FIELD AND EITHER THE GEOMAGNETIC FIELD MODEL THAT USES THE POGO 10/68 COEFFICIENTS OR THE MODEL THAT USES THE GSFC 12/66 COEFFICIENTS. THE COEFFICIENTS AND THE EPHEMERIS TAPE REQUIRED FOR THIS PROGRAM ARE AVAILABLE. THE EPHEMERIS TAPE IS 7-TRACK, BINARY, WRITTEN AT 556 BPI AND PRODUCED ON A 7094. IT CONTAINS ONE FILE.

EXPERIMENT NAME- LOW-ENERGY PROTON, ALPHA PARTICLE  
MEASUREMENT

NSSDC ID 65-081A-07

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO, CHICAGO, ILL.  
E.C. STONE, CAL TECH, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/01/67

EXPERIMENT BRIEF DESCRIPTION

TWO SOLID-STATE PARTICLE TELESCOPES WERE USED TO STUDY LOW-ENERGY COSMIC-RAY PROTONS AND ALPHA PARTICLES. ONE OF THESE DETECTORS WAS A THREE-ELEMENT RANGE TELESCOPE ('VERTICAL' TELESCOPE) THAT WAS CAPABLE OF IDENTIFYING PROTONS AND ALPHA PARTICLES (1.22 TO 39.2 AND 9.32 TO 39.2 MEV/NUCLEON) AND ELECTRONS (E.GT. 400 KEV AND E.GT. 700 KEV). THE OTHER DETECTOR WAS A ONE-ELEMENT TELESCOPE ('HORIZONTAL' TELESCOPE) SENSITIVE TO PROTONS AND ALPHA PARTICLES IN THE ENERGY RANGE FROM 0.72 TO ABOUT 11 MEV/NUCLEON. THE VERTICAL TELESCOPE AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT Z AXIS, WHICH LATER UNINTENTIONALLY BECAME THE SPIN AXIS. THE HORIZONTAL TELESCOPE SYMMETRY AXIS WAS NEARLY PARALLEL TO THE SPACECRAFT Y AXIS (PERPENDICULAR TO THE Z AXIS). PULSE HEIGHT INFORMATION WAS SENT BACK FROM THE VERTICAL TELESCOPE ALLOWING PULSE HEIGHT ANALYSES OF PROTONS (ENERGIES FROM 1.22 TO 39.2 MEV), ALPHA PARTICLES (ENERGIES FROM 4.88 TO 156.8 MEV), AND ELECTRONS (E.GT. 400 KEV) USING A 256-CHANNEL PULSE HEIGHT ANALYZER. COUNT RATE INFORMATION WAS SENT BACK FROM BOTH TELESCOPES. THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.02 SEC TO ABOUT ONE MEASUREMENT PER 0.3 SEC DEPENDING ON THE COUNTING MODE AND THE TELEMETRY BIT RATE. THE UNINTENDED SPIN PERIOD OF THE SPACECRAFT 10 DAYS AFTER LAUNCH WAS ABOUT 10 MIN. THE EXPERIMENT WAS PERFORMING NORMALLY AT THE TIME THE SPACECRAFT SYSTEMS WERE DEACTIVATED (NOVEMBER 1, 1967).

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) AND  
ORBITAL DATA ON MICROFILM

NSSDC ID 65-081A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/15/65 TO 12/13/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SIX 35-MM MICROFILM REELS OF REDUCED DATA IN THE FORM OF COUNT RATE (BOTH SINGLE AND COINCIDENCE RATES) PLOTS. EACH PLOT COVERS ONE OGO 2 ORBIT AND CONTAINS SEVERAL DIFFERENT COUNTING RATES AS WELL AS SATELLITE ORBIT DATA, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND EITHER DIPOLE LOCAL TIME OR MAGNETIC LOCAL TIME. THROUGHOUT THE MICROFILM, THE RELEVANT SCALES ARE INCLUDED APPROXIMATELY EVERY 100 FRAMES. EACH PLOT CONTAINS THE FOLLOWING COINCIDENCE COUNT RATES FROM THE VERTICAL TELESCOPE -- V3 (PROTON AND ALPHA PARTICLE ENERGIES GREATER THAN 39.2 MEV/NUCLEON OR ELECTRON ENERGIES GREATER THAN 1 MEV), V1 NOT V3 (CORRESPONDS TO PROTON AND ALPHA PARTICLE ENERGIES FROM 1.22 TO 39.2 MEV/NUCLEON OR ELECTRONS FROM 0.4 TO 1 MEV), AND V2 NOT V3 AND V1V2 NOT V3 (BOTH OF WHICH CORRESPOND TO PROTON AND ALPHA PARTICLE ENERGIES FROM 9.32 TO 39.2 MEV/NUCLEON AND ONLY THE FORMER TO ELECTRON ENERGIES FROM 0.7 TO 1 MEV). THE ONE HORIZONTAL TELESCOPE COUNTING RATE IN THE FORMAT CORRESPONDS TO A PROTON AND ALPHA PARTICLE ENERGY THRESHOLD OF 720 KEV/NUCLEON. THE V3 COUNT RATE PLOTTED IS AN AVERAGE RATE OBTAINED OVER FIVE READOUTS WHEREAS THE OTHER THREE RATES, AS CALCULATED FOR THESE PLOTS, HAVE A NOMINAL ACCUMULATION TIME OF 15 SEC. THE DATA SET PROVIDES A COMPACT SAMPLE OF THE DATA FROM THIS EXPERIMENT. SINCE OGO 2 TUMBLED, THE USER OF THESE DATA SHOULD CONSULT 'OGO-C ORIENTATION STUDY,' BY P.E. DIMOTAKIS (CAL TECH SPACE RADIATION LAB. INTERNAL REPORT NO. 9) FOR

HELP IN OBTAINING THE CORRECT ATTITUDE OF THE INSTRUMENT.

EXPERIMENT NAME- GALACTIC AND SCLAR COSMIC RAY

NSSDC ID 65-081A-08

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- W.R. WEBBER, U OF NEW HAMPSHIRE , DURHAM, N.H.

DATE LAST USEFUL DATA RECORDED- 10/24/65

EXPERIMENT BRIEF DESCRIPTION

THIS COSMIC-RAY TELESCOPE EXPERIMENT WAS DESIGNED TO MEASURE THE DIFFERENTIAL ENERGY SPECTRA OF PROTONS, HELIUM NUCLEI, AND HEAVIER NUCLEI UP TO  $Z = 10$ , WITHIN THE ENERGY RANGE OF 50 TO 2000 MEV PER NUCLEON. THE TELESCOPE HAD A MAXIMUM SAMPLING RATE OF ONE COUNT PER 288 MSEC. THE TELESCOPE CONSISTED OF TWO DETECTORS, A SCINTILLATOR WITH ITS ASSOCIATED PHOTOMULTIPLIER (PM) TUBE, AND A SCINTILLATOR AND A CERENKOV ELEMENT SANDWICH WITH BOTH ELEMENTS OPTICALLY COUPLED TO THE SAME PM TUBE. A 70-NANOSEC COINCIDENCE CIRCUIT COUPLED THE TWO DETECTORS TO FORM THE TELESCOPE. PULSES FROM EACH DETECTOR WERE PULSE HEIGHT ANALYZED. SAMPLE PULSE HEIGHTS, THE COINCIDENCE COUNT RATE, AND THE COUNT RATE OF THE FIRST DETECTOR WERE TELEMETERED. THE NOISE LEVELS OF THE SPACECRAFT INCREASED TO SUFFICIENT AMPLITUDE TO RENDER THE SINGLES RATE DATA UNUSABLE EXCEPT DURING ECLIPSE PERIODS. ALL THE USEFUL DATA FROM THIS EXPERIMENT WERE OBTAINED BETWEEN OCTOBER 15 AND OCTOBER 24, 1965, AND ABOUT 17 PERCENT OF THE DATA OBTAINED DURING THIS PERIOD CONTAIN USEFUL INFORMATION.

DATA SET NAME- REDUCED PARTICLE COUNT RATES ON TAPE

NSSDC ID 65-081A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/15/65 TO 10/24/65

DATA SET BRIEF DESCRIPTION

THESE REDUCED PARTICLE COUNT RATE DATA ARE CONTAINED ON ONE EXPERIMENTER GENERATED 7-TRACK, 556-BPI, BINARY MAGNETIC TAPE WRITTEN ON THE CDC 1604 COMPUTER. THE DATA ON THE TAPE ARE ORDERED BY THE ORBIT PASS, AS INDICATED BY THE MAXIMUM VALUE OF THE MCILWAIN L PARAMETER. THE DATA CONSIST OF 37-SEC AVERAGED TELESCOPE RATES AND 18-SEC AVERAGED SINGLES RATES. THESE DATA COMPRISE ALL THE USEFUL INFORMATION OBTAINED FROM THE COSMIC-RAY EXPERIMENT. THE TAPE CONTAINS NINE-BIT-WORD TELESCOPE RATES, NINE-BIT-WORD SINGLES RATES, UT, ALTITUDE, LATITUDE, LONGITUDE, MCILWAIN L, AND MAGNETIC FIELD.



DATA SET NAME- PLOTS OF REDUCED PARTICLE COUNT RATES ON  
MICROFILM

NSSDC ID 65-081A-088

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/15/65 TO 10/24/65

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF FIRST GENERATION 16-MM MICROFILMED PLOTS. BOTH SINGLES COUNT RATES AND TELESCOPE RATES ARE PLOTTED AGAINST TIME. THE DATA PLOTTED HERE ARE THE SAME AS THOSE RECORDED ON MAGNETIC TAPE IN DATA SET 65-081A-08A. THEY ARE ORDERED BY ORBIT PASS.

EXPERIMENT NAME- MICROMETEORITE DETECTORS

NSSDC ID 65-081A-14

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- C.S. NILSSON, SAO , CAMBRIDGE, MASS.  
D. WILSON, SAO , CAMBRIDGE, MASS.

DATE LAST USEFUL DATA RECORDED- 04/08/66

EXPERIMENT BRIEF DESCRIPTION

FOUR THIN-FILM CAPACITOR MICROMETEORITE DETECTORS WERE CARRIED ABOARD THE POLAR-ORBITING OGO 2 SPACECRAFT TO OBTAIN MEASUREMENTS OF THE VELOCITIES, MASSES, AND ORBITS OF DUST PARTICLES IN THE EARTH'S DUST CLOUD. THE DETECTORS WERE CIRCULAR TUBES, 2.5 CM IN DIAMETER AND 10 CM LONG, EACH CONTAINING THREE SENSORS -- TWO THIN-FILM CAPACITORS AND A MICROPHONE CRYSTAL. THE FRONT SENSOR CONSISTED OF TWO THIN LAYERS OF 500-A-THICK ALUMINUM OXIDE EACH COATED FRONT AND BACK WITH 500 A OF ALUMINUM. THE REAR SENSOR WAS A 1-MICRON-THICK SILICON OXIDE LAYER COATED FRONT AND BACK WITH 1000 A OF ALUMINUM AND WAS DEPOSITED ON A GLASS DISK. THE THIRD SENSOR WAS A LEAD ZIRCONATE CRYSTAL TRANSDUCER THAT WAS BONDED TO THE REAR OF EACH GLASS DISK. A PARTICLE THAT PASSED THROUGH THE FRONT SENSOR WOULD GIVE RISE TO A SMALL PLASMA PULSE, WHICH WAS DETECTED BY AN AMPLIFIER AND THEN USED TO START AN OSCILLATOR THAT MEASURED THE TIME OF FLIGHT DOWN THE TUBE. AFTER TRAVERSING THE LENGTH OF THE TUBE, THE PARTICLE WOULD IMPACT DESTRUCTIVELY ON THE REAR CAPACITOR SENSOR PRODUCING ANOTHER PLASMA PULSE, WHICH WAS USED TO STOP THE TIME-OF-FLIGHT OSCILLATOR AND PROVIDE SOME MEASURE OF THE PARTICLE'S ENERGY. THE IMPULSE IMPARTED TO THE GLASS DISK BY THE PARTICLE IMPACT WAS DETECTED AND MEASURED BY THE MICROPHONE CRYSTAL AND PROVIDED INFORMATION ON THE MOMENTUM OF THE PARTICLE. A REASONABLE MASS THRESHOLD FOR BOTH THIN-FILM CAPACITOR SENSORS WAS ESTIMATED TO BE 10 TO THE MINUS 12 POWER GRAMS. THREE OF THE FOUR TUBES WERE POINTED IN MUTUALLY ORTHOGONAL DIRECTIONS. ONE OF THE DETECTORS WAS SHIELDED FROM PARTICLE IMPACTS TO SERVE AS A CONTROL AGAINST ELECTRICAL INTERFERENCE. THE ONLY SENSOR TO FAIL WAS THE REAR CAPACITOR ON THE SHIELDED DETECTOR. THE EXPERIMENT HEATER FAILED AFTER 1 WEEK OF OPERATION, INTRODUCING NUMEROUS

FALSE COUNTS INTO THE TRANSDUCER DATA OUTPUT DUE TO THE TRANSDUCER-NOISE TEMPERATURE DEPENDENCE. ELECTRICAL INTERFERENCE ARISING FROM COMMANDS SENT TO THE SPACECRAFT CAUSED THE REAR CAPACITOR SENSOR DATA TO CONTAIN MANY FALSE COUNTS. IN 1370 HR OF DATA, ONLY TWO POSSIBLE MICROMETEOROID IMPACTS WERE FOUND. HOWEVER, THE FLUX RATE DETERMINED FROM THESE DATA COMPARES FAVORABLY WITH FLUX RATES OBTAINED FROM EXPERIMENTS ON EARLIER SPACECRAFT.

DATA SET NAME- ANALYZED DATA PUBLISHED IN SAO CONTRACT  
REPORT NAS 5-1107

NSSDC ID 65-081A-14A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 10/16/65 TO 04/08/66

#### DATA SET BRIEF DESCRIPTION

THE DATA SET IS CONTAINED IN THE PUBLISHED REPORT 'THE MICROMETEOROID EXPERIMENT ON THE OGO 2 SATELLITE,' BY C.S. NILSSON AND D. WILSON, SAO CONTRACT REPORT NAS 5-1107, FEBRUARY 1969. THE PUBLICATION INCLUDES A DISCUSSION OF THE EXPERIMENT INSTRUMENTATION, DATA ARRANGEMENT, INFLIGHT COMPARISON OF DATA, AND A SAMPLE OF PLAYBACK DATA FROM THE MASTER DATA TAPE. THE PLAYBACK DATA CONSISTED OF 1370 HR OF RECORDS. REAL-TIME DATA CONSISTED OF ABOUT 100 HR. THE RAW DATA WERE MACHINE REDUCED THROUGH THREE LEVELS. THE FIRST LEVEL ELIMINATED REPETITIONS AND TELEMETRY NOISE AND PASSED ALONG ONLY THOSE RECORDS THAT REMAINED, WHICH CONSISTED MAINLY OF INFLIGHT CALIBRATION DATA. THE SECOND LEVEL ELIMINATED MICROPHONE NOISE AND MOST OF THE INFLIGHT CALIBRATION DATA AND PASSED ALONG A FEW GENUINE INFLIGHT CALIBRATION RECORDS AND ALL THE NOISE AND OTHER EVENTS WITH NONZERO REAR CAPACITOR SENSOR DATA. THE THIRD LEVEL FILTERED OUT ALL EVENTS CAUSED BY ELECTRICAL INTERFERENCE DUE TO SPACECRAFT COMMANDS AND LEFT ONLY NONZERO SENSOR RECORDS AND SOME GENUINE INFLIGHT CALIBRATION DATA. THE LATTER RECORDS WERE REMOVED FROM THE DATA BY HAND SINCE THEY HAD PASSED THROUGH THE SECOND LEVEL DUE TO INCORRECTLY LABELED TEMPERATURES. FURTHER REDUCTION BY HAND WAS REQUIRED TO ELIMINATE NOISE OF UNKNOWN ORIGIN, LEAVING ONLY TWO RECORDS OF POSSIBLE METEORITIC ORIGIN. PRIOR TO HAND REDUCTION, THE THREE LEVELS OF AUTOMATED DATA REDUCTION HAD TRIMMED THE 1370 HR OF PLAYBACK DATA, CONSISTING OF ABOUT 140,000 RECORDS, DOWN TO 98 RECORDS REQUIRING CLOSER ATTENTION. A TABLE IS GIVEN IN THE REPORT LISTING THE TWO POSSIBLE EVENTS AND THEIR TIME OF OCCURRENCE (DAY, HR, MIN, SEC) AND VARIOUS SENSOR INFORMATION. FALSE RECORDS WERE PRODUCED FROM WITHIN THE EXPERIMENT. FAILURE OF THE REAR CAPACITOR SENSOR ON ONE OF THE DETECTORS PRODUCED SO MANY FALSE RECORDS THAT THE SPAN OF USEFUL DATA COVERAGE WAS LIMITED TO THE PERIOD FROM OCTOBER 16, 1965, TO APRIL 8, 1966. THESE FALSE EVENTS ALSO CAST SUSPICION ON THE REMAINING TWO POSSIBLE EVENTS. AT BEST, THE TWO EVENTS REPRESENT AN UPPER LIMIT TO THE FLUX OF PARTICLES LARGER THAN ABOUT 10 TO THE MINUS 12 POWER GRAMS. THE FLUX RATES DERIVED FROM THE EVENT DATA COMPARE FAVORABLY WITH RESULTS OBTAINED FROM EXPERIMENTS ON EARLIER SPACECRAFT.

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SPACECRAFT NAME- EXPLORER 30  
OTHER NAMES- SE-A, 1965-093A, SOLRAD 8

NSSDC ID 65-093A

LAUNCH DATE- 11/18/65 DATE LAST SCIENTIFIC DATA RECORDED- 08/24/67

AGENCY- NRL SPACECRAFT WEIGHT IN ORBIT- 57 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 11/18/65 ORBIT PERIOD- 100.8 MIN.  
APOGEE- 900. KM ALT PERIGEE- 692. KM ALT INCLINATION- 59.71 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE NRL SOLRAD 8 SATELLITE WAS ONE OF A SERIES OF SATELLITES THAT BEGAN IN 1960 TO PROVIDE CONTINUOUS COVERAGE OF SOLAR RADIATION WITH A SET OF STANDARD PHOTOMETERS. SOLRAD 8 WAS A SPIN-STABILIZED SATELLITE ORIENTED WITH ITS SPIN AXIS PERPENDICULAR TO THE SUN-SATELLITE LINE SO THAT THE 14 SOLAR X-RAY AND ULTRAVIOLET PHOTOMETERS POINTING RADIALY OUTWARD FROM ITS EQUATORIAL BELT VIEWED THE SUN WITH EACH REVOLUTION. DATA WERE TRANSMITTED IN REAL TIME BY MEANS OF AN FM/FM TELEMETRY SYSTEM AND WERE RECORDED BY THE STATIONS ON THE STADAN TRACKING NETWORK. THE SATELLITE PERFORMED NORMALLY EXCEPT FOR THE SPIN SYSTEM, WHICH FAILED TO MAINTAIN 60 RPM. (AT SPIN RATES BELOW 10 RPM, DATA REDUCTION BECOMES DIFFICULT.) THE SPIN RATE GRADUALLY DECREASED TO 4 RPM ON SEPTEMBER 12, 1966. AT THAT TIME, GROUND COMMAND SUCCEEDED IN REACTIVATING SPINUP TO 78 RPM, WHICH EXHAUSTED THE GAS SUPPLY. FROM THIS POINT, THE SPIN RATE GRADUALLY DECREASED TO 10 RPM IN AUGUST 1967, WHEN DATA COLLECTION WAS TERMINATED.

EXPERIMENT NAME- SOLAR X-RAY AND ULTRAVIOLET MONITOR

NSSDC ID 65-093A-01

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

INVESTIGATORS- R.W. KREPLIN, NAVAL RESEARCH LAB , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 08/24/67

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MONITOR SOLAR X-RAY AND ULTRAVIOLET EMISSIONS WITH A SET OF STANDARDIZED DETECTORS SO THAT THE DATA COULD BE COMPARED DIRECTLY WITH THAT PRODUCED BY OTHER EXPERIMENTS IN THE SOLRAD SERIES. EIGHT ION CHAMBERS AND TWO GEIGER COUNTERS COVERING THE SPECTRAL REGIONS FROM 0.5 A TO 60 A AND 1080 A TO 1350 A WERE MOUNTED FACING PERPENDICULAR TO THE SATELLITE SPIN AXIS. ANALOG OUTPUTS FROM THE DETECTORS WERE TRANSMITTED CONTINUOUSLY ON SIX IRIG TELEMETRY CHANNELS. THE EXPERIMENT PROVIDED GOOD DATA FOR ALL DETECTORS FROM NOVEMBER 27, 1965, TO AUGUST 24, 1967, WITH THE FOLLOWING EXCEPTIONS -- (1) THE LYMAN-ALPHA DETECTOR AND THE UV DETECTORS WERE SATURATED FOR NORMAL ASPECT ANGLES, (2)

THE CORE MEMORY FAILED AT LAUNCH SO THAT THE DATA WERE COLLECTED IN REAL-TIME TELEMETRY ONLY, AND (3) A GRADUAL DECREASE IN SPIN RATE CAUSED THE ASPECT ANGLE TO DRIFT AWAY FROM NORMAL IN THE SECOND YEAR OF OPERATION.

DATA SET NAME- ONE-MIN AVERAGES OF X-RAY FLUX VALUES ON NSSDC ID 65-093A-018  
REFORMATTED TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/27/65 TO 08/24/67

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF ONE BCD, VARIABLE, BLOCKED, IBM 7094 MAGNETIC TAPE WRITTEN AT 556 BPI. A PHYSICAL RECORD FOR EACH PASS OVER A TELEMETRY STATION CONTAINS A LOGICAL HEADER RECORD AND A SERIES OF LOGICAL DETECTOR RECORDS. THE LENGTH OF THE DETECTOR RECORD VARIES WITH THE NUMBER OF SAMPLES OBTAINED DURING THE PASS. THE DATA SPAN THE PERIOD NOVEMBER 27, 1965, THROUGH AUGUST 24, 1967. DATA INCLUDE (1) YEAR, MONTH, DAY, (2) PASS NUMBER, (3) STATION, (4) ASPECT ANGLE, (5) NUMBER OF SAMPLES, (6) UNIVERSAL TIME, AND (7) 1-MIN AVERAGES OF X-RAY FLUX (OR UV CURRENT) FOR EACH DETECTOR.

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SPACECRAFT NAME- ALOUETTE 2 NSSDC ID 65-098A  
OTHER NAMES- ALOUETTE-B, 1965-098A, S 27A

LAUNCH DATE- 11/29/65 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- CRC-NASA SPACECRAFT WEIGHT IN ORBIT- 145 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 11/29/65 ORBIT PERIOD- 121 MIN.  
APOGEE- 2956. KM ALT PERIGEE- 529. KM ALT INCLINATION- 79.724 DEGREES

SPACECRAFT BRIEF DESCRIPTION

ALOUETTE 2 WAS A SMALL IONOSPHERIC OBSERVATORY INSTRUMENTED WITH A SWEEP FREQUENCY IONOSPHERIC SOUNDER, A VLF RECEIVER, TWO ENERGETIC PARTICLE EXPERIMENTS, A COSMIC NOISE EXPERIMENT, AND AN ELECTROSTATIC PROBE. THE SOUNDER USED TWO LONG DIPOLE ANTENNAS (78.9 M AND 22.8 M LONG, RESPECTIVELY) FOR THE SOUNDER, VLF, AND COSMIC NOISE EXPERIMENTS. THE SATELLITE WAS SPIN STABILIZED AT ABOUT 2.25 RPM AFTER ANTENNA DEPLOYMENT. BY JANUARY 1970, THE SPIN HAD DECAYED TO 1.84 RPM. (THE USE OF END PLATES ON THE LONG ALOUETTE 2 ANTENNA SEEMS TO HAVE ELIMINATED THE RAPID DESPIN PROBLEM THAT HAD OCCURRED ON ALOUETTE 1. IT WAS BELIEVED THAT THIS PROBLEM HAD RESULTED FROM THERMAL DISTORTION OF THE ANTENNA AND RADIATION PRESSURE.) THERE WAS NO TAPE RECORDER ON ALOUETTE 2 SO THAT DATA WERE AVAILABLE ONLY AT THE SATELLITE AND FOR THE SUBSATELLITE REGIONS WHEN THE SPACECRAFT WAS IN THE LINE OF SIGHT OF TELEMETRY STATIONS. TELEMETRY STATIONS WERE LOCATED SO THAT PRIMARY DATA COVERAGE WAS NEAR THE 80 DEG W

MERIDIAN PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, ENGLAND, INDIA, NORWAY, AND CENTRAL AFRICA. INITIALLY, DATA WERE RECORDED FOR ABOUT 7-1/2 HR PER DAY. AT PRESENT, OBSERVATIONS ARE MADE FOR ABOUT 4 TO 5 HR PER DAY.

DATA SET NAME- GSFC EXTENDED WORLD MAPS ON MICROFILM

NSSDC ID 65-098A-00C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/29/65 TO 01/17/71

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITION AND SUPPORTING INFORMATION FOR EACH MINUTE (EVERY 2 MIN AFTER SEPTEMBER 1970) OF GMT. THE INFORMATION IN THE LISTINGS INCLUDES LOCAL SOLAR TIME, GEODETIC LOCATION, SEVERAL VARIETIES OF MAGNETIC FIELD REFERENCED LOCATION, AND SUN POSITION. DATA ARE ALSO GIVEN FOR SPECIAL TIMES (EQUATOR CROSSINGS, NORTHERNMOST AND SOUTHERNMOST POINTS, SUNLIGHT ENTRANCE AND EXIT, ETC.). THE DATA ARE CONTAINED ON FIFTY-FIVE 100-FT REELS OF 35-MM MICROFILM (AS OF APRIL 1971).

DATA SET NAME- CRC INDEX OF EXPERIMENT 'DATA AVAILABLE'  
ON TAPE

NSSDC ID 65-098A-00E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/29/65 TO 12/31/66

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED BY THE CANADIAN COMMUNICATIONS RESEARCH CENTRE IN OTTAWA, INDEX THE START AND STOP TIMES FOR THE OPERATION OF ALL FIVE SATELLITE EXPERIMENTS. THE INFORMATION PRESENTED INCLUDES -- TELEMETRY STATION, TELEMETRY TAPE IDENTIFICATION, DAY OF YEAR, START TIME DIP LATITUDE AND GYROFREQUENCY AT THE SATELLITE, START AND STOP VALUES OF GMT FOR EACH PASS, LOCAL MEAN TIME, HEIGHT ABOVE THE SPHEROID, AND GEODETIC POSITION. THE DATA ARE ON ONE REEL OF 1/2-IN., 800-BPI, 7- OR 9-TRACK, BCD MAGNETIC TAPE.

DATA SET NAME- CRC PUBLISHED INDEX OF EXPERIMENT 'DATA  
AVAILABLE'

NSSDC ID 65-098A-00F

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 11/29/65 TO 12/31/66

DATA SET BRIEF DESCRIPTION

THESE DATA INDEX THE START AND STOP GMT FOR THE OPERATION OF ALL FIVE

SATELLITE EXPERIMENTS. THE INFORMATION PRESENTED INCLUDES -- TELEMETRY STATION, TELEMETRY TAPE IDENTIFICATION, START VALUES OF DIP LATITUDE AND GYROFREQUENCY AT THE SATELLITE, DAY OF YEAR, AND, FOR EACH TELEMETRY PASS STATION, START AND STOP VALUES OF LOCAL MEAN TIME, HEIGHT ABOVE THE SPHEROID, AND GEODETIC POSITION. THE DATA ARE IN ONE VOLUME ENTITLED 'ALOUETTE II DATA AVAILABLE,' PUBLISHED BY THE DEPARTMENT OF COMMUNICATIONS, COMMUNICATIONS RESEARCH CENTRE, OTTAWA, CANADA. IF THIS REPORT CANNOT BE OBTAINED FROM THE ORIGINAL SOURCE, NSSDC WILL TRY TO PROVIDE THE DATA.

EXPERIMENT NAME- SWEEP FREQUENCY IONOSONDE

NSSDC ID 65-098A-01

ORIGINAL EXPERIMENT INSTITUTION- DRTE

INVESTIGATORS- G.L. NELMS, COMM RESEARCH CENTRE , OTTAWA, CANADA  
J.E. JACKSON, NASA-GSFC , GREENBELT, MD.  
J.W. KING, RSRS , SLOUGH, BUCKS, ENGLAND  
L. COLIN, NASA-ARC , MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE SWEEP FREQUENCY IONOSONDE WAS A RADIO TRANSMITTER/RECEIVER THAT RECORDED THE TIME DELAY BETWEEN A TRANSMITTED AND RETURNED RADIO FREQUENCY PULSE. A CONTINUUM OF FREQUENCIES BETWEEN .12 AND 14.5 MHZ WERE SAMPLED ONCE EVERY 32 SEC. A MULTIPLICITY OF DELAY TIMES WAS USUALLY OBSERVED DUE TO BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, GROUND ECHOES, PLASMA RESONANCES, ETC. (DELAY TIME IS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE PROPAGATION PATH, AND MODE OF PROPAGATION.) THE STANDARD DATA FORM WAS AN IONOGRAM (GRAPH) SHOWING DELAY TIME (VIRTUAL DISTANCE OF SIGNAL REFLECTION FROM THE SATELLITE) VS FREQUENCY. TWO OTHER COMMON FORMS OF DATA WERE PREPARED FROM THE IONOGRAMS -- DIGITAL FREQUENCY AND/OR VIRTUAL HEIGHT VALUES OF CHARACTERISTIC IONOSPHERIC FEATURES AND ELECTRON DENSITY PROFILES. PERFORMANCE HAS BEEN EXCELLENT. INITIALLY, ABOUT 7-1/2 HR OF OBSERVATIONS PER DAY WERE MADE. IN JUNE 1971, 4 TO 5 HR PER DAY WERE BEING RECORDED. AN INDEX OF OPERATION TIMES AND LOCATIONS FOR THIS EXPERIMENT IS AVAILABLE IN DATA SET 65-098A-00E.

DATA SET NAME- SWEEP FREQUENCY IONOGRAMS ON MICROFILM

NSSDC ID 65-098A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/29/65 TO 09/10/69

DATA SET BRIEF DESCRIPTION

THESE IONOGRAMS ARE REDUCED DATA PLOTS ON 35-MM MICROFILM SHOWING FREQUENCY

VS ECHO TIME DELAY (VIRTUAL RANGE) OF PULSED RADIO SIGNALS. THEY ARE AN ORIGINAL FORM OF THE DATA PREPARED DIRECTLY FROM THE TELEMETRY TAPE. THE DATA ARE AS COMPLETE AS IS PERMITTED BY THE LIMITATIONS OF SPACECRAFT POWER, LACK OF ONEBOARD TAPE RECORDING (TELEMETRY STATION LOCATION, TELEMETRY STATION SCHEDULING, ETC.), AND DATA PROCESSING FACILITIES. DATA EXIST FROM NOVEMBER 29, 1965, AND ARE STILL BEING RECORDED. PROCESSING LIMITATIONS RESULT IN A DELAY OF ABOUT 1 YR FROM OBSERVATION TIME TO IONOGRAM PREPARATION. AN ADDED DELAY FOR EXPERIMENTER PROPRIETARY USE RESULTS IN A TOTAL DELAY OF ABOUT 2 YR FROM OBSERVATION TIME TO GENERAL AVAILABILITY OF THE IONOGRAM TO THE PUBLIC. THE DATA COVERAGE IS PRIMARILY NEAR THE 80 DEG W MERIDIAN FOR PERIODS OF TIME UP TO 7-1/2 HR PER DAY. OVER 2100 REELS (100 FT PER REEL) OF MICROFILMED IONOGRAMS ARE AVAILABLE AT NSSDC. SINCE ONLY TIME IS NOTED ON EACH IONOGRAM, SATELLITE POSITION AND OTHER RELATED DATA MUST BE OBTAINED FROM ANOTHER SOURCE. (SEE DATA SET 65-098A-00C.)

DATA SET NAME- RRL PUBLISHED ELECTRON DENSITY AND SCALE  
HEIGHT PROFILES

NSSDC ID 65-098A-01D

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 10/12/66 TO 04/19/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ELECTRON DENSITY PROFILES COMPUTED FROM THE DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT THAT WERE SCALED FROM IONOGRAMS. THESE ARE ANALYZED DATA IN TWO BOUND BOOKS PREPARED BY THE RADIO RESEARCH LABORATORIES, MINISTRY OF POSTS AND TELECOMMUNICATIONS, TOKYO, JAPAN. WITHIN THE VOLUMES, DATA ARE ORDERED CHRONOLOGICALLY. ALL DATA WERE OBSERVED FROM THE JAPANESE TELEMETRY STATION AT KASHIMA. SATELLITE LOCATION, OBSERVATION TIME, SOLAR ZENITH ANGLE AT THE SATELLITE, HEIGHT OF THE F2 MAXIMUM, DENSITY AT THE F2 MAXIMUM, TOTAL ELECTRON CONTENT BETWEEN THE SATELLITE AND THE F2 MAXIMUM, KP, AND AN INDICATION OF PROFILE QUALITY ARE INCLUDED WITH EACH PROFILE. HEIGHT OF MAXIMUM, ELECTRON DENSITY AT MAXIMUM, AND TOTAL ELECTRON CONTENT ARE MISSING FROM A MAJORITY OF THE PROFILES BECAUSE OF THE LACK OF IONOSPHERIC REFLECTIONS ON THE IONOGRAMS NEAR THE F2 CRITICAL FREQUENCIES. THIS HAPPENS FREQUENTLY WHEN THE SATELLITE ALTITUDE IS HIGH, I.E., ABOVE 1200 TO 1500 KM. PROFILE DATA CONSIST OF ELECTRON DENSITY AND REAL HEIGHT VALUES INTERPOLATED FOR EACH 50 KM AND EXTENDING FROM THE NEXT STANDARD LEVEL BELOW THE SATELLITE DOWN TO THE LOWEST STANDARD LEVEL FROM WHICH REFLECTIONS WERE OBSERVED. TEN PROFILES ARE LISTED ON EACH PAGE. AN INDEX OF THE 56 PASSES (718 PROFILES), BY PASS, IS INCLUDED WITH THE EXPLANATORY TEXT. SIMILARLY FORMATTED SCALE HEIGHT PROFILES ARE ALSO INCLUDED. THESE DATA INCLUDE ALL OBSERVATIONS MADE NEAR KASHIMA DURING A 6-MONTH PERIOD, BUT THEY REPRESENT A VERY SMALL PORTION OF THE TOTAL ALOUETTE 2 IONOSONDE OBSERVATIONS.

DATA SET NAME- INDEXING INFORMATION FOR SWEEP FREQUENCY  
IONOGRAMS WITH DUCTED ECHOES

NSSDC ID 65-098A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/01/65 TO 08/13/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 16-MM REEL OF MICROFILM THAT CONTAINS LISTINGS THAT IDENTIFY IONOGRAMS SHOWING DUCTED ECHOES. THESE ARE CONSIDERED AS ANALYZED DATA SINCE THE CASES PRESENTED IN THE DATA SET WERE SELECTED FROM A LARGE NUMBER OF IONOGRAMS REVIEWED AND SINCE THE LISTINGS PROVIDE SEVERAL FREQUENCY CHARACTERISTICS OF THE DUCTED ECHOES THAT HAVE BEEN SCALED FROM THE IONOGRAMS. THESE DATA WERE PREPARED AT NASA'S ELECTRONICS RESEARCH CENTER FROM MOST OF THE ALOUETTE 2 IONOGRAMS OBSERVED FROM LAUNCH UNTIL APRIL 21, 1969. THERE ARE TWO DIFFERENT FORMATS FOR THE IONOGRAMS. INFORMATION INCLUDED ON BOTH FORMATS INCLUDES UNIVERSAL TIME AND LOCAL SOLAR OBSERVATION TIME, GEODETIC AND GEOMAGNETIC LOCATION OF THE SATELLITE, TELEMETRY STATION, GYROFREQUENCY AT THE SATELLITE LOCATION, AND DISCRETE FREQUENCIES RELATING TO THE DUCTED ECHOES. ONE FORMAT ALSO CONTAINS ADDITIONAL INFORMATION RELATING TO THE DUCTED ECHO CHARACTERISTICS. THE FIRST LISTING INDEXES 6171 IONOGRAMS FROM OVER 100 DIFFERENT ROLLS (100 FT) OF IONOGRAMS FROM 17 DIFFERENT TELEMETRY STATIONS. THE SECOND LISTING PROVIDES MORE DETAILED INFORMATION ON 2922 OF THESE IONOGRAMS FROM SANTIAGO, SINGAPORE, AND ORRORAL. THE SECOND LISTING IS ORDERED CHRONOLOGICALLY, BY STATION.

DATA SET NAME- PHOTOGRAPHIC PRINTS OF SWEEP FREQUENCY  
IONOGRAMS WITH DUCTED ECHOES

NSSDC ID 65-098A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/29/65 TO 04/21/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS A SUBSET OF DATA SET 65-098A-01A. IT CONSISTS OF 8- BY 10-IN. PHOTOGRAPHIC PRINTS, PREPARED FROM THE IONOGRAM FILM, WHICH SHOW DUCTED ECHOES (I.E., ECHOES HAVING UNUSUALLY LONG DELAY TIMES OR LARGE VIRTUAL RANGES). EACH PRINT COVERS FREQUENCIES FROM BELOW .5 MHZ TO OVER 5 MHZ. A DETAILED INVENTORY OF THESE DATA HAS NOT YET BEEN COMPLETED. THE DATA CONSIST OF 80 BOOKS OF APPROXIMATELY 40 IONOGRAMS PER BOOK, FROM REGIONS NEAR 17 DIFFERENT TELEMETRY STATIONS. THESE DATA WERE OBTAINED FROM IONOGRAMS TAKEN BETWEEN NOVEMBER 29, 1965, AND APRIL 21, 1969. THESE DATA ARE A RELATIVELY COMPLETE COLLECTION OF DUCTED ECHO IONOGRAMS OBSERVED BY ALOUETTE 2 DURING THIS TIME PERIOD BUT MAKE UP ONLY A VERY SMALL PORTION OF THE TOTAL NUMBER OF ALOUETTE 2 IONOGRAMS OBSERVED DURING THAT PERIOD. A PUBLISHED DESCRIPTION OF THE DATA AND SOME OF THEIR USES IS CONTAINED IN NASA TN-D-5332. SINCE ONLY TIME IS NOTED ON EACH IONOGRAM, SATELLITE POSITION AND OTHER RELATED DATA MUST BE OBTAINED FROM ANOTHER SOURCE. (SEE DATA SET 65-098A-00C OR 65-098A-00E.)

DATA SET NAME- CRC INTERPOLATED ELECTRON DENSITY  
PROFILES IN PUBLISHED REPORT

NSSDC ID 65-098A-01G

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)



TIME SPAN OF DATA- 12/15/65 TO 12/29/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ELECTRON DENSITY PROFILES COMPILED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT THAT WERE SCALED FROM IONOGRAMS. THESE ARE ANALYZED DATA PRESENTLY IN ONE BOUND BOOK PREPARED BY THE COMMUNICATIONS RESEARCH CENTRE, DEPARTMENT OF COMMUNICATIONS, OTTAWA, CANADA. MORE VOLUMES ARE PLANNED. DATA ARE ORDERED CHRONOLOGICALLY WITHIN THE VOLUME. TELEMETRY STATIONS ARE NOT IDENTIFIED, BUT SATELLITE LOCATION, TIME OF OBSERVATION, SATELLITE LOCAL TIME, DIP LATITUDE AT THE SATELLITE, AND OTHER RELEVANT INFORMATION ARE LISTED FOR EACH PROFILE. PROFILE DATA CONSIST OF ELECTRON DENSITY AND REAL HEIGHT VALUES FOR THE SATELLITE HEIGHT AND FOR STANDARD HEIGHTS FROM THE SATELLITE DOWN TO THE LOWEST HEIGHT FROM WHICH IONOSPHERIC REFLECTIONS WERE OBSERVED (NOT BELOW 250 KM). STANDARD HEIGHTS ARE FOR 50-KM INTERVALS UP TO 500 KM, FOR 100-KM INTERVALS UP TO 1600 KM, AND FOR 200-KM INTERVALS UP TO 3000 KM. EACH PAGE IS DESIGNED TO ACCOMMODATE 24 PROFILES. THERE ARE 2440 SOUNDINGS LISTED FROM 107 PASSES. OF THESE, 194 OF THE SOUNDINGS LIST NO PROFILE DATA AT STANDARD HEIGHTS. AN INDEX BY PASS APPEARS IN THE FRONT OF THE VOLUME. THE IONOGRAMS REDUCED WERE SELECTED FOR THEIR SCIENTIFIC INTEREST AND COMPRISE A VERY SMALL SAMPLE OF THE ALOUETTE 2 SOUNDINGS TAKEN. PROFILES FROM NUMEROUS LONGITUDES AND LATITUDES ARE INCLUDED, BUT THOSE FROM NORTHERN HEMISPHERE LATITUDES NEAR 80 DEG W ARE MOST NUMEROUS.

DATA SET NAME- CRC ELECTRON DENSITY VALUES AT LAMINA  
BOUNDARIES - REDUCED IONOGRAMS IN BOOKS

NSSDC ID 65-098A-01H

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 12/29/65 TO 12/15/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ANALYZED ELECTRON DENSITY PROFILES, COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL HEIGHT, THAT WERE SCALED FROM IONOGRAMS. THESE ARE ANALYZED DATA IN BOUND BOOKS THAT WERE PREPARED BY THE COMMUNICATIONS RESEARCH CENTRE (CRC) IN OTTAWA, CANADA. WITHIN EACH VOLUME (TWO BOOKS PER VOLUME), THE DATA ARE ORDERED CHRONOLOGICALLY. TELEMETRY STATIONS ARE NOT IDENTIFIED, BUT SATELLITE LOCATION, TIME OF OBSERVATION, SOLAR ZENITH ANGLE AT THE SATELLITE, DIP LATITUDE AT THE SATELLITE, TOTAL ELECTRON CONTENT DOWN TO ALTITUDE OF HIGHEST IONOSPHERICALLY REFLECTED FREQUENCY, AND OTHER RELEVANT INFORMATION ARE LISTED FOR EACH PROFILE. PROFILE DATA CONSIST OF ELECTRON DENSITY AND REAL HEIGHT VALUES FOR EACH POINT SCALED FROM THE IONOGRAM. FOR INTERPOLATED VALUES OF ELECTRON DENSITY AT STANDARD INCREMENTS OF REAL HEIGHT, SEE DATA SET 65-098A-01G. EACH PROFILE OCCUPIES ABOUT FOUR LINES OF PRINT, AND A CHRONOLOGICAL INDEX OF ALL DATA FROM ALL VOLUMES APPEARS IN THE FRONT OF EACH BOOK. THE IONOGRAMS REDUCED WERE SELECTED FOR THEIR SCIENTIFIC INTEREST AND COVER TIMES FROM DECEMBER 1965 TO DECEMBER 1967. THESE REDUCTIONS ARE FROM A VERY SMALL PORTION OF THE TOTAL OF NEARLY 1 MILLION ALOUETTE 2 IONOGRAMS OBSERVED. DATA FOR MOST LATITUDES ARE INCLUDED, BUT THOSE DATA FROM LONGITUDES NEAR 80 DEG W ARE MORE NUMEROUS THAN THOSE FROM OTHER LONGITUDES.

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SPACECRAFT NAME- FR-1  
OTHER NAMES- 1565-101A

NSSDC ID 65-101A

LAUNCH DATE- 12/06/65 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- CNES-NASA SPACECRAFT WEIGHT IN ORBIT- 60 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 12/06/65 ORBIT PERIOD- 100 MIN.  
APOGEE- 740. KM ALT PERIGEE- 735. KM ALT INCLINATION-78.9706 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE FR-1 SPACECRAFT WAS A SMALL SPACECRAFT CARRYING TWO EXPERIMENTS. ONE WAS DESIGNED TO OBSERVE VLF SIGNALS FROM EARTH-BASED TRANSMITTERS, AND THE OTHER WAS AN ELECTRON DENSITY PROBE THAT MEASURED ELECTRON CONCENTRATION AT THE SATELLITE. THE SATELLITE STRUCTURE CONSISTED OF TWO TRUNCATED OCTAGONAL PYRAMIDS JOINED AT THEIR BASES BY AN OCTAGONAL PRISM MEASURING 68.6 CM ACROSS FROM CORNER TO CORNER. THIS BASIC STRUCTURE WAS COVERED WITH SOLAR CELLS AND MEASURED ABOUT 71 CM HIGH. EXTENDING 48.2 CM DOWNWARD FROM THE BASE OF THIS STRUCTURE WAS THE ELECTRON DENSITY PROBE. EXTENDING UPWARD FROM THE TOP WAS A STRUCTURE 71.1 CM HIGH WHICH CONSISTED OF THE MAGNETIC FIELD ANTENNA AND ITS SUPPORTING TUBE. EXTENDING DIAGONALLY UPWARD FROM THE BASE OF THIS TUBE WERE FOUR TELEMETRY ANTENNAS. FOUR 198-CM-LONG ELECTRIC FIELD ANTENNA BOOMS EXTENDED OUTWARD FROM THE BASE OF THE PRISMATIC PORTION OF THE BASIC STRUCTURE. THE SPACECRAFT WAS SPIN STABILIZED, WITH ATTITUDE AND SPIN DETERMINATION MADE FROM OBSERVATIONS BY A SUN SENSOR AND A TRIAXIAL FLUXGATE MAGNETOMETER. THERE WAS NO TAPE RECORDER ON BOARD, SO REAL-TIME DATA WERE OBTAINED AS SCHEDULED OVER DESIGNATED TELEMETRY STATIONS. THIS SATELLITE IS BEING USED TO STUDY VLF PROPAGATION IN THE MAGNETOSPHERE AND IRREGULARITIES IN THE TOPSIDE IONOSPHERE.

EXPERIMENT NAME- VLF RECEIVER

NSSDC ID 65-101A-01

ORIGINAL EXPERIMENT INSTITUTION- CNET

INVESTIGATORS- L.R.O. STOREY, IONOSPHERIC RSCH GROUP , SAINT-MAUR, FRANCE  
C. RENARD, CNET , FRANCE  
M.P. AUBRY, CNET , FRANCE

DATE LAST USEFUL DATA RECORDED- 08/26/68

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF EQUIPMENT TO OBSERVE THE FIELD STRENGTH OF THE MAGNETIC AND ELECTRIC FIELDS AT THE SATELLITE WHICH RESULTED FROM

TRANSMISSIONS OF TWO VLF GROUND TRANSMITTERS. THE ELECTRIC FIELD INTENSITY WAS OBSERVED WITH TWO DIPOLES AND THEIR CORRESPONDING RECEIVERS, AND THE MAGNETIC FIELD INTENSITY WAS OBSERVED WITH THREE LOOP ANTENNAS AND THEIR CORRESPONDING RECEIVERS. THE OBSERVATIONS CONSISTED OF FIELD STRENGTH RECORDINGS VS TIME (LOCATION) IN THE REGIONS OVER THE GROUND TRANSMITTER AND IN THE REGION CONJUGATE TO THE GROUND TRANSMITTER. THE EXPERIMENT FAILED ON AUGUST 26, 1968, AFTER 30 MONTHS OF OPERATION. THIS FAR EXCEEDED THE 3-MONTH PLANNED LIFETIME. A MORE EXTENSIVE EXPERIMENT DESCRIPTION IS GIVEN BY M.P. AUBRY IN J. ATMOSPHERIC TERREST. PHYS., 30, NO. 6, 1161-1182, JUNE 1968.

DATA SET NAME- QUICK-LOOK VLF MAGNETIC FIELD DATA ON MICROFILM NSSDC ID 65-101A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/07/65 TO 08/01/68

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF QUICK-LOOK ANALOG DATA ON ONE REEL OF 35-MM MICROFILM. EACH FRAME SHOWS THE SATELLITE TRAJECTORY FOR ONE PASS, SUPERIMPOSED ON AN OUTLINE MAP OF THE REGION OVER WHICH THE SATELLITE FLEW. ALONG THE DIRECTION OF SATELLITE MOTION, THE VARIATION OF H (RMS VALUE OVER ONE PERIOD OF OSCILLATION OF THREE-COMPONENT VLF MAGNETIC FIELD STRENGTH) IS PLOTTED IN DECIBELS TO THE RIGHT OF THE TRAJECTORY. TO THE LEFT OF THE TRAJECTORY, ON A LINEAR SCALE, THE AXIS RATIO OF THE POLARIZATION ELLIPSE IS PLOTTED. THE SATELLITE ALTITUDES ARE INDICATED AT THE END OF EACH OF THE 1-MIN MARKERS THAT ARE PLACED ALONG THE TRAJECTORY. BREAKS IN THE FIELD STRENGTH RECORDS CORRESPONDING TO THE TRANSMITTER CODE APPEAR EVERY 10 SEC. TIME, ORBIT, SCALE, ETC., ARE INDICATED DIGITALLY TO THE LEFT OF EACH MAP. THE DATA ON HAND COVER 355 PASSES AND COMPRISE ONLY A LIMITED PORTION OF ALL OBSERVATIONS MADE.

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SPACECRAFT NAME- PIONEER 6 NSSDC ID 65-105A  
OTHER NAMES- PIONEER-A, 1565-105A

LAUNCH DATE- 12/16/65 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 63.4 KG

ORBIT TYPE- HELIOCENTRIC EPOCH- 12/16/65 ORBIT PERIOD- 311.3 DAYS  
APOGEE- .936 AU RAD PERIGEE- .8143 AU RAD INCLINATION- .1639 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

PIONEER 6 WAS THE FIRST IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A

CONTINUING BASIS. ITS EXPERIMENTS STUDIED THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, AND THE INTERPLANETARY MAGNETIC FIELD. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS FOR USE AT THE TWO HIGHEST BIT RATES. ANOTHER WAS FOR USE AT THE THREE LOWEST BIT RATES. THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE REAL TIME, TELEMETRY STORE, DUTY CYCLE STORE, AND MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME INTERVAL BETWEEN THE COLLECTION AND STORAGE OF SUCCESSIVE FRAMES COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 15 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. THE BIT RATE WAS 512 BPS FROM DECEMBER 16, 1965, TO FEBRUARY 28, 1966, 256 BPS FROM MARCH 1, 1966, TO MARCH 17, 1966, 64 BPS FROM MARCH 18, 1966, TO APRIL 13, 1966, 16 BPS FROM APRIL 14, 1966, TO MAY 9, 1966, AND 8 BPS FROM MAY 10, 1966, AND THEREAFTER. THE REAL-TIME TRANSMISSION MODE WAS USED PREDOMINANTLY THROUGHOUT THE FLIGHT WHEN TRACKING STATIONS WERE AVAILABLE. BETWEEN TRACKING PERIODS, THE DUTY CYCLE STORE MODE WAS GENERALLY USED. THE SPIN RATE WAS CLOSE TO NOMINAL FOR THE FIRST 6 MONTHS. THERE WAS A LEAK IN THE ATTITUDE GAS SYSTEM, AND NO FURTHER ATTITUDE CORRECTIONS COULD BE MADE FOLLOWING THE ONE ON JUNE 9, 1966. THE SPACECRAFT AND TELEMETRY SYSTEMS HAVE OPERATED NORMALLY, AND, EXCEPT FOR 1 MONTH (JULY 1966) WHEN OPERATION WAS INTERMITTENT, THE DATA RECEPTION HAS BEEN ESSENTIALLY CONTINUOUS TO THE PRESENT (JUNE 1971).

EXPERIMENT NAME- SINGLE AXIS MAGNETOMETER

NSSDC ID 65-105A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- N.F. NESS, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 07/06/70

#### EXPERIMENT BRIEF DESCRIPTION

A SINGLE, BOOM-MOUNTED, UNIAXIAL FLUXGATE MAGNETOMETER, WITH A DYNAMIC RANGE OF PLUS OR MINUS 64 GAMMAS AND PLUS OR MINUS 0.25-GAMMA RESOLUTION, OBTAINED A COMPLETE VECTOR MAGNETIC FIELD MEASUREMENT BY MEANS OF THREE MEASUREMENTS TAKEN AT EQUAL TIME INTERVALS DURING EACH SPACECRAFT SPIN PERIOD (APPROXIMATELY 1 SEC). AT TELEMETRY BIT RATES LESS THAN OR EQUAL TO

16 EPS, AVERAGES WERE COMPUTED ON BOARD FOR TRANSMISSION TO EARTH. THE INSTRUMENT WORKED WELL FROM LAUNCH TO JULY 6, 1970. NO USEFUL DATA HAVE BEEN RETURNED FROM THAT DATE TO THE PRESENT (JANUARY 31, 1971).

DATA SET NAME- THIRTY-SEC AVERAGED VECTOR MAGNETIC  
FIELD DATA ON TAPE

NSSDC ID 65-105A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/26/66 TO 07/26/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE 7-TRACK, 556-BPI, IBM 7094 BINARY TAPES SUPPLIED BY THE EXPERIMENTER. EACH TAPE CONTAINS ONE FILE, AND EACH PHYSICAL RECORD CONTAINS DATA FOR 1 HR. THIRTY-SEC AVERAGES OF THE VECTOR MAGNETIC FIELD COMPONENTS ARE GIVEN IN SOLAR ECLIPTIC COORDINATES. THE NUMBER OF POINTS IN EACH AVERAGE (UP TO 30) AND THE STANDARD DEVIATION ARE GIVEN. TIMES OF THE AVERAGES AND OTHER SUPPORTING INFORMATION ARE ALSO GIVEN. THERE IS NO SPACECRAFT EPHEMERIS INFORMATION. DATA FOR ADDITIONAL TIME PERIODS WILL BE ADDED TO THIS DATA SET AS THEY BECOME AVAILABLE.

EXPERIMENT NAME- SOLAR WIND PLASMA FARADAY CUP

NSSDC ID 65-105A-02

ORIGINAL EXPERIMENT INSTITUTION- MIT

INVESTIGATORS- H.S. BRIDGE, MIT, CAMBRIDGE, MASS.  
A.J. LAZARUS, MIT, CAMBRIDGE, MASS.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

A MULTIGRID FARADAY CUP WITH TWO SEMICIRCULAR, COPLANAR COLLECTORS WAS USED TO STUDY SOLAR WIND IONS AND ELECTRONS. THE INSTRUMENT HAD 14 CONTIGUOUS ENERGY PER CHARGE CHANNELS BETWEEN 75 AND 9485 V FOR POSITIVE IONS AND FOUR ENERGY PER CHARGE CHANNELS BETWEEN 90 AND 1580 V FOR ELECTRONS. THE INSTRUMENT VIEW AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND PARALLEL TO THE ECLIPTIC PLANE. THE LINE SEPARATING THE TWO COLLECTORS LAY IN THE ECLIPTIC PLANE, ENABLING A ROUGH DETERMINATION OF SOLAR WIND BULK FLOW PERPENDICULAR TO THE ECLIPTIC PLANE. DURING EVERY SECOND SPACECRAFT ROTATION AND AT ONE VOLTAGE LEVEL, THE SUM OF THE CURRENTS FROM THE COLLECTORS WAS OBTAINED IN 26 CONTIGUOUS 11.25-DEG ANGULAR SECTORS (FROM -45 DEG TO 270 DEG, WITH 0 DEG BEING THE SPACECRAFT-SUN LINE). THE EIGHT MEASUREMENTS ABOUT THE SUN-EARTH LINE (-45 DEG TO +45 DEG) WERE TELEMETERED, BUT ONLY THE LARGEST MEASUREMENT IN EACH SUCCEEDING 45-DEG INTERVAL (45 DEG TO 270 DEG) WAS TELEMETERED. IN ADDITION, DURING THIS ROTATION, THE CURRENT FROM ONE OF THE COLLECTORS WAS MEASURED IN ALL TWENTY-EIGHT 11.25-DEG SECTORS, AND THE LARGEST WAS IDENTIFIED AND TELEMETERED (BOTH MAGNITUDE AND SECTOR). A COMPLETE SET OF POSITIVE ION

MEASUREMENTS AND ONE ENERGY CHANNEL OF ELECTRON MEASUREMENTS WERE COMPLETED EVERY 32 SEC. THE TIME BETWEEN EACH 32-SEC GROUP OF MEASUREMENTS VARIED WITH THE BIT RATE. THE EXPERIMENT HAS WORKED WELL FROM LAUNCH TO THE PRESENT (JUNE 1971). FOR A MORE COMPLETE DESCRIPTION, SEE J. GEOPHYS. RES., 71, 3787-3791, AUG. 1966.

DATA SET NAME- PLOTS OF HOURLY AVERAGED SOLAR WIND  
PLASMA PARAMETERS ON MICROFILM

NSSDC ID 65-105A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/18/65 TO 04/03/69

DATA SET BRIEF DESCRIPTION

THESE FIRST GENERATION ANALYZED DATA CONSIST OF TIME-ORDERED PLOTS OF 1-HR AVERAGES OF SOLAR WIND POSITIVE ION BULK SPEED (KM/SEC), DENSITY (NO./CUBIC CM), AND TEMPERATURE (IN 10,000 DEG K). INDIVIDUAL PLOTS CONTINUE FOR ONE SOLAR ROTATION (27 DAYS) AND ARE AVAILABLE ON ONE REEL OF 35-MM MICROFILM. DATA PLOTS FROM THE MIT EXPERIMENT ON PIONEER 7 (DATA SET 66-075A-02A) APPEAR ON THIS SAME REEL OF MICROFILM. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION. DATA ARE AVAILABLE FROM DECEMBER 18, 1965, TO MAY 1966, WITH 95 PERCENT COVERAGE, AND FROM JUNE 1966 TO APRIL 3, 1969, WITH 20 PERCENT COVERAGE.

EXPERIMENT NAME- COSMIC-RAY TELESCOPE

NSSDC ID 65-105A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- C.Y. FAN, U OF ARIZONA , TUCSON, ARIZ.  
J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED A CHARGED PARTICLE TELESCOPE COMPOSED OF FOUR SILICON SOLID-STATE DETECTORS TO STUDY THE ANISOTROPY AND FLUCTUATIONS OF SOLAR PROTONS AND ALPHA PARTICLES. THE PROTON ENERGY RANGES SAMPLED WERE 0.6 TO 13.9 MEV, 13.9 TO 73.2 MEV, 73.2 TO 175 MEV, AND E.GT. 175 MEV (CORRESPONDING TO DETECTOR COINCIDENCES D1 NOT D2 NOT D4, D1D2 NOT D3 NOT D4, D1D2D3 NOT D4, AND NOT D1D2D3 NOT D4). THE ALPHA PARTICLE ENERGY RANGES SAMPLED WERE 2.4 TO 55.6 MEV, 55.6 TO 293 MEV, AND E.GT. 293 MEV (CORRESPONDING TO THE FIRST THREE DETECTOR COINCIDENCES GIVEN ABOVE). THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.4 SEC TO ABOUT ONE MEASUREMENT PER 26 SEC DEPENDING ON THE TELEMETRY BIT RATE. THE DETECTOR WAS MOUNTED SO THAT IT MADE A 360-DEG SCAN IN THE ECLIPTIC PLANE ABOUT ONCE PER SECOND. PULSE HEIGHT ANALYSIS OF DETECTOR D1 OUTPUT (128 CHANNEL) AND D3 OUTPUT (32 CHANNEL) WAS ACCOMPLISHED FOR THE LAST EVENT PRIOR TO EACH

TELEMETRY READOUT FOR THE EXPERIMENT. THE D3 DETECTOR FAILED ON OCTOBER 22, 1967. THE D4 DETECTOR PERFORMED INTERMITTENTLY UP TO LATE 1969. OTHER EXPERIMENT COMPONENTS WERE WORKING NORMALLY AS OF JUNE 1971.

DATA SET NAME- REDUCED COUNT RATE AND PULSE HEIGHT  
ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID 65-105A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/16/65 TO 12/30/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PROTON AND ALPHA PARTICLE COUNT AND PULSE HEIGHT ANALYZER ACCUMULATOR READINGS IN A TIME-ORDERED FORMAT ON TEN 7-TRACK, BINARY, IBM-COMPATIBLE MAGNETIC TAPES WRITTEN AT 800 BPI. THE TIME RESOLUTION FOR THE COUNT ACCUMULATOR DATA RANGED FROM ABOUT ONE MEASUREMENT PER 0.4 TO 28 SEC DEPENDING ON THE SPACECRAFT TELEMETRY RATE. EACH PHYSICAL RECORD CONSISTS OF 500 LOGICAL RECORDS OF 12 BYTES (CHARACTERS) EACH. THE LOGICAL RECORDS ARE OF TWO TYPES -- HEADER RECORDS AND DATA RECORDS. A GIVEN HEADER RECCRD IS FOLLOWED BY FROM 1 TO 64 DATA RECORDS OF THE SAME SPACECRAFT SUBCOM SEQUENCE. EACH TAPE TERMINATES WITH AN EOD FLAG IN THE LAST GOOD DATA RECORD. EACH HEADER RECORD INCLUDES VARIOUS SPACECRAFT TEMPERATURES, SPIN RATE, TELEMETRY BIT RATE, AND OTHER HOUSEKEEPING PARAMETERS. EACH DATA RECCRD INCLUDES TIME, PULSE HEIGHT ANALYZER OUTPUT (D1 AND D3 ELEMENTS OF THE COSMIC-RAY TELESCOPE USING A 128-CHANNEL AND A 32-CHANNEL ANALYZER, RESPECTIVELY), FOUR PROTON AND ALPHA PARTICLE TELESCOPE COINCIDENCE ACCUMULATIONS, AND DATA QUALITY INFORMATION. THE FOUR PARTICLE COINCIDENCE COMBINATIONS ARE D1 NOT D2 NOT D4 (FOUR BITS PER LOGICAL RECCRD), D1D2 NOT D3 NOT D4 (THREE BITS), D1D2D3 NOT D4 (THREE BITS), AND NOT D1D2D3 NOT D4 (THREE BITS) CORRESPONDING TO PROTON AND ALPHA PARTICLE ENERGIES OF 0.6 TO 13.9 MEV, 13.9 TO 73.2 MEV, 73.2 TO 175 MEV (E.GT. 293 MEV FOR ALPHA PARTICLES), AND E.GT. 175 MEV (INSENSITIVE TO ALPHA PARTICLES). THE DATA ARE UNCORRECTED BUT HAVE BEEN EDITED TO THE EXTENT THAT DOUBTFUL INFORMATION HAS BEEN FLAGGED AND UNUSABLE DATA DELETED. THE PULSE HEIGHT ANALYZER ACCUMULATORS WERE SAMPLED FOR THE LAST EVENT PRIOR TO EACH SPACECRAFT TELEMETRY READOUT FOR THE EXPERIMENT.

DATA SET NAME- COUNT RATE PLOTS AND TRAJECTORY PLOT ON  
MICROFILM

NSSDC ID 65-105A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/16/65 TO 03/11/70

DATA SET BRIEF DESCRIPTION

THE DATA SET IS CONTAINED ON ONE REEL OF 16-MM MICROFILM THAT INCLUDES (1) A PLOT OF THE PIONEER 6 TRAJECTORY IN HELIOCENTRIC SOLAR ECLIPTIC COORDINATES COVERING THE TIME INTERVAL FROM DAY 350 OF 1965 (DECEMBER 16, 1965) TO DAY 70 OF 1970 (MARCH 11, 1970) AND (2) COUNT RATE PLOTS

(COUNTS/SEC VS DAY NUMBER) PRODUCED ON A CALCCMP PLOTTER FOR 27-DAY INTERVALS FOR THE TELESCOPE COINCIDENCE COMBINATIONS THAT CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.6 TO 13.9 MEV, 13.9 TO 73.2 MEV, 73.2 TO 175 MEV, AND E.GT. 175 MEV (D1 NOT D2 NOT D4, D1D2 NOT D3 NOT D4, D1D2D3 NOT D4, AND NOT D1D2D3 NOT D4). THE COUNT RATE DATA, WHICH ARE A COMPOSITE OF REAL-TIME DATA AND DUTY CYCLE STORAGE DATA, COVER THE TIME INTERVAL FROM DECEMBER 16, 1965, TO MARCH 11, 1970.

DATA SET NAME- COSMIC-RAY PROTON COUNTING RATES  
PUBLISHED IN 'SOLAR GEOPHYSICAL DATA'

NSSDC ID 65-105A-03

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/01/69 TO 04/30/71

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MONTHLY TABULAR LISTINGS OF DIRECTIONAL COUNTING RATES OF PROTONS WITH ENERGIES IN THE INTERVALS 0.6 TO 13.9 MEV, 13.9 TO 175 MEV, AND GREATER THAN 175 MEV. THE RATES ARE TYPICALLY GIVEN ONCE PER DAY. A LETTER FLAG INDICATES WHETHER THE FLUX WAS RISING, STEADY, OR FALLING AT THE TIME FOR WHICH THE DATA ARE PRESENTED. DATA OBTAINED DURING A GIVEN MONTH ARE PUBLISHED IN 'SOLAR GEOPHYSICAL DATA (PROMPT REPORTS)' WITH A 1-MONTH LAG. THE FIRST DATA PUBLISHED WERE FOR THE MONTH OF APRIL 1969, AND PLANS CALL FOR CONTINUED PUBLICATION OF THESE DATA FOR AS LONG AS THE EXPERIMENT REMAINS OPERATIONAL.

EXPERIMENT NAME- TWO-FREQUENCY BEACON RECEIVER

NSSDC ID 65-105A-04

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- V.R. ESHLEMAN, STANFORD U , PALO ALTO, CALIF.  
T.A. CROFT, STANFORD U , PALO ALTO, CALIF.

DATE LAST USEFUL DATA RECORDED- 08/00/66

EXPERIMENT BRIEF DESCRIPTION

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED FROM A 4.6-M STEERABLE PARABOLIC ANTENNA AT STANFORD UNIVERSITY TO THE TWO-FREQUENCY RADIO RECEIVER ON THE SPACECRAFT. THE HIGH-FREQUENCY SIGNAL SERVED AS A REFERENCE SIGNAL SINCE ITS PROPAGATION TIME WAS NOT APPRECIABLY DELAYED. THE LOW-FREQUENCY SIGNAL WAS DELAYED IN PROPORTION TO THE TOTAL ELECTRON CONTENT IN THE PROPAGATION PATH. ON THE SPACECRAFT, A PHASE LOCKED RECEIVER COUNTED THE BEAT FREQUENCY ZERO CROSSINGS OF THE RECEIVED SIGNALS TO OBTAIN MEASUREMENTS OF PHASE-PATH DIFFERENCES. DIFFERENTIAL DELAY OF THE GROUP VELOCITY WAS ALSO OBSERVED, AND THESE VALUES WERE TELEMETERED TO THE GROUND STATION. FROM CALCULATED TOTAL ELECTRON CONTENT VALUES, THE IONOSPHERIC EFFECT (UP TO A SELECTED ALTITUDE OBTAINED FROM OTHER EXPERIMENTAL TECHNIQUES) WAS SUBTRACTED TO PRODUCE DATA DESCRIBING THE



INTERPLANETARY ELECTRON CONTENT OF THE SOLAR WIND AND ITS VARIATIONS. THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH TO AUGUST 1966. FOR SIMILAR EXPERIMENTS COVERING OTHER TIME PERIODS, SEE 68-100A-03, 67-123A-03, 66-075A-04, AND 67-060A-02. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN J. GEOPHYS. RES., 71, 3325-3327, 1966, AND IN RADIO SCIENCE, VOL 6, 5E-63, 1971.

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON TAPE

NSSDC ID 65-105A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/16/65 TO 07/11/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE 556-BPI, 7-TRACK, 8CD MAGNETIC TAPE GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE TAPE ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 7 (66-075A-04A), 8 (67-123A-03A), AND 9 (68-100A-03A) AND MARINER 5 (67-060A-02A).

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON MICROFILM

NSSDC ID 65-105A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/16/65 TO 07/11/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED AND PLOTTED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM GENERATED AT NSSDC FROM DATA SUPPLIED BY THE EXPERIMENTER. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 7 (66-075A-04B), 8 (67-123A-03B), AND 9 (68-100A-03B) AND MARINER 5 (67-060A-02B) AND SOLAR WIND ELECTRON DENSITY PLOTS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D).

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON TAPE

NSSDC ID 65-105A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/10/66 TO 06/01/66

DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF HOURLY VALUES OF NORMALIZED ELECTRON NUMBER DENSITY IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES, AND THE TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE THEN NORMALIZED TO 1 AU ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. VALUES RESULTING FROM INTERPOLATION ARE FLAGGED. NO INTERPOLATED VALUES WERE RECORDED WHEN DATA GAPS EXCEEDED 4 DAYS. THIS DATA SET IS ON ONE 800-BPI, 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN ON AN IBM 7094 COMPUTER. AUXILIARY DATA ON THE TAPE INCLUDE UT AND CARRINGTON ROTATION NUMBER. DATA ARE AVAILABLE FOR ABOUT 12 HR PER DAY WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 7 (66-075A-04D), 8 (67-123A-03C), AND 9 (68-100A-03C) AND MARINER 5 (67-060A-02C) ALSO APPEAR ON THIS TAPE.

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON MICROFILM

NSSDC ID 65-105A-04E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/10/66 TO 06/01/66

DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF PLOTS OF ELECTRON DENSITY VS TIME IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT FOR THE SAME TIMES AT A NEARBY LOCATION WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES. THEN THE OBSERVED TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE NORMALIZED TO 1 AU, ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D) AND HOURLY VALUES OF TOTAL ELECTRON CONTENT FROM PIONEERS 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), AND 9 (68-100A-03B) AND MARINER 5 (67-060A-02B). THIS DATA SET IS ALSO AVAILABLE ON TAPE (65-105A-04D).

EXPERIMENT NAME- PLASMA PROBE (AMES RESEARCH CENTER)

NSSDC ID 65-105A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

INVESTIGATORS- J.H. WOLFE, NASA-ARC , MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

A QUADRISPHERICAL ELECTROSTATIC ANALYZER WITH EIGHT CONTIGUOUS CURRENT COLLECTORS WAS USED TO STUDY THE DIRECTIONAL INTENSITY OF ELECTRONS AND POSITIVE IONS IN THE SOLAR WIND. IONS WERE DETECTED IN 16 LOGARITHMICALLY SPACED ENERGY PER UNIT CHARGE (E/Q) STEPS FROM 200 TO 10,000 V. THERE WAS AN ELECTRON MODE OF OPERATION IN WHICH ELECTRONS WERE MEASURED IN EIGHT LOGARITHMICALLY SPACED ENERGY PER CHARGE STEPS RANGING FROM 0 TO 500 V. THE EIGHT COLLECTORS MEASURED PARTICLES INCIDENT FROM EIGHT DIFFERENT CONTIGUOUS ANGULAR INTERVALS RELATIVE TO THE SPACECRAFT EQUATORIAL PLANE (SAME AS THE ECLIPTIC PLANE). THERE WERE FOUR 15-DEG INTERVALS, TWO 20-DEG INTERVALS, AND TWO 30-DEG INTERVALS. AS THE SPACECRAFT WAS SPINNING, FLUXES WERE MEASURED IN 15 AZIMUTHAL ANGULAR SECTORS. EIGHT OF THESE SECTORS WERE 5-5/8 DEG WIDE, WERE CONTIGUOUS, AND BRACKETED THE SOLAR DIRECTION. THE REMAINING SEVEN SECTORS WERE 45 DEG WIDE. THREE DIFFERENT MODES OF DATA COLLECTION WERE USED. AT THE HIGHEST BIT RATE (512 BPS), THE FULL SCAN MODE WAS ALTERNATED WITH THE MAXIMUM FLUX MODE AT EACH E/Q STEP. IN THE FULL SCAN MODE, THE MAXIMUM FLUX OBSERVED IN EACH OF THE 15 AZIMUTHAL SECTORS AS THE SPACECRAFT ROTATED WAS RECORDED FOR A GIVEN SINGLE COLLECTOR AT A GIVEN E/Q STEP. IN THE MAXIMUM FLUX MODE, ALL COLLECTORS FOR THE GIVEN E/Q STEP WERE OBSERVED, AND THE MAXIMUM FLUX OBTAINED WAS REPORTED ALONG WITH THE NUMBER OF THE COLLECTOR THAT OBSERVED IT AND THE AZIMUTHAL DIRECTION OF THE OBSERVATION. THE AZIMUTHAL DIRECTION IN THE MAXIMUM FLUX MODE WAS MEASURED TO THE NEAREST 128TH OF A SPACECRAFT REVOLUTION, NAMELY, 2-13/16 DEG. ALTERNATING FULL SCAN MODE AND MAXIMUM FLUX MODE MEASUREMENTS WERE MADE FOR THE 16 ION E/Q STEPS AND THE EIGHT ELECTRON E/Q STEPS FOR COLLECTOR NO. 1, AFTER WHICH THE PROCESS WAS REPEATED FOR COLLECTORS NO. 2 THROUGH 8. THUS, IN A FULL CYCLE AT THE 512-BPS RATE, FULL SCAN MODE MEASUREMENTS WERE MADE FOR ALL EIGHT COLLECTORS AT 24 (16 ION AND EIGHT ELECTRON) E/Q STEPS, AS WELL AS EIGHT SETS OF MAXIMUM FLUX MODE MEASUREMENTS FOR THE 24 E/Q STEPS. AT THE NEXT HIGHEST BIT RATE (256 BPS), THE SHORT SCAN MODE WAS ALTERNATED WITH THE MAXIMUM FLUX MODE AT EACH E/Q STEP. IN THE SHORT SCAN MODE, ONLY THE EIGHT 5-5/8-DEG WIDE AZIMUTHAL SECTORS CENTERED ABOUT THE SOLAR DIRECTION WERE COVERED. AT THE LOW BIT RATES (64 BPS, 16 BPS, AND 8 BPS), THE MAXIMUM FLUX MODE ALONE WAS USED. THUS, NO AZIMUTHAL DISTRIBUTIONS WERE MEASURED. THE FULL SCAN MODE AND SHORT SCAN MODE DATA WERE, OF NECESSITY, GATHERED ONLY DURING THE FIRST FEW MONTHS OF THE MISSION BECAUSE AFTER THAT TIME THE SPACECRAFT WAS TOO FAR AWAY FOR SUCCESSFUL TRANSMISSION AT THE HIGH BIT RATES. HENCE, ALL OF THE DATA AFTER THE FIRST FEW MONTHS OF THE MISSION WERE TAKEN IN THE MAXIMUM FLUX MODE ONLY. THE INSTRUMENT HAS WORKED WELL FROM LAUNCH TO PRESENT (MARCH 1971).

DATA SET NAME- PLOTS OF ANALYZED PLASMA PARAMETERS ON  
MICROFILM

NSSDC ID 65-105A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/16/65 TO 10/27/68

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED PLOTS OF THE FOLLOWING SOLAR WIND PARAMETERS -- (1) PROTON NUMBER DENSITY (PROTONS/CUBIC CM), (2) AZIMUTH (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX FOR IONS (DEG), (3) BULK VELOCITY (KM/SEC), (4) POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG), (5) PROTON TEMPERATURE AND HELIUM TEMPERATURE (DEG), (6) HELIUM/HYDROGEN RATIO (NUMBER OF HELIUM IONS/CUBIC CM/NUMBER OF PROTONS/CUBIC CM), (7) ELECTRON TEMPERATURE (DEG K), AND (8) TWO INDICATORS OF THE ANISOTROPY IN THE SOLAR PLASMA ION TEMPERATURE DISTRIBUTION. THE EXPERIMENTER GIVES THE FOLLOWING INDICATORS OF ACCURACY -- (1) BULK VELOCITY, GOOD TO 10 PERCENT, (2) DIRECTION, GOOD TO A FEW DEGREES, AND (3) TEMPERATURE AND DENSITY, COULD BE OFF BY AS MUCH AS 200 PERCENT. THE PLOTS ARE AVAILABLE ON SEVEN REELS OF 16-MM MICROFILM. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER BASED ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION (IN THE FRAME MOVING WITH THE BULK SOLAR WIND VELOCITY). DATA ARE AVAILABLE FROM DECEMBER 16, 1965, TO FEBRUARY 1966 WITH A 95 PERCENT COVERAGE, FROM MARCH 1966 TO MAY 1966 WITH A 50 PERCENT COVERAGE, AND FROM JUNE 1966 TO OCTOBER 27, 1968, WITH A 10 PERCENT COVERAGE.

EXPERIMENT NAME- SUPERIOR CONJUNCTION FARADAY ROTATION

NSSDC ID 65-105A-08

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- G.S. LEVY, NASA-JPL, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 12/08/68

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED MEASUREMENTS OF THE POLARIZATION OF THE SPACECRAFT TELEMETRY SIGNAL TO OBTAIN MEASUREMENTS OF THE RELATIVE FARADAY ROTATION DUE TO THE INTERPLANETARY MEDIUM AND THE EARTH'S IONOSPHERE.

DATA SET NAME- SUPERIOR CONJUNCTION FARADAY ROTATION  
DATA ON TAPE

NSSDC ID 65-105A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/26/68 TO 12/08/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS REDUCED DATA IN THE FORM OF CARD IMAGES (84-CHARACTER RECORDS) ON ONE 7-TRACK, BCD, 556-BPI, SINGLE FILE MAGNETIC TAPE. THE DATA ARE LISTINGS OF THE POLARIZATION ANGLE (RELATIVE TO THE ECLIPTIC PLANE) AVERAGED IN 200-SEC INTERVALS, THE STANDARD DEVIATION, AND THE AVERAGE TIME AND DATE (IN DECIMAL DAYS) OF THE OBSERVATIONS. THE DATA ARE COMPLETE. DATA FROM PIONEER 7 (DATA SET 66-075A-08A) ARE ALSO INCLUDED.

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SPACECRAFT NAME- NIMBUS 2  
OTHER NAMES- 1966-040A

NSSDC ID 66-040A

LAUNCH DATE- 05/15/66 DATE LAST SCIENTIFIC DATA RECORDED- 01/17/69

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 414 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 05/16/66 ORBIT PERIOD- 108 MIN.  
APOGEE- 1179. KM ALT PERIGEE- 1109. KM ALT INCLINATION-100.311 DEGREES

SPACECRAFT BRIEF DESCRIPTION

NIMBUS 2 WAS A LARGE, STABILIZED, EARTH-ORIENTED SATELLITE THAT WAS LAUNCHED INTO A NEARLY CIRCULAR, 600-N.M., SUN-SYNCHRONOUS, POLAR ORBIT. NIMBUS 2 WAS THE SECOND OF THE SERIES OF SECOND GENERATION METEOROLOGICAL SATELLITES. THE SATELLITE CARRIED TELEVISION CAMERAS, A HIGH-RESOLUTION INFRARED RADIOMETER (HRIR), AND A MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR). THE SATELLITE AND THE EXPERIMENTS WERE A SUCCESS. ON JANUARY 17, 1969, AFTER NEARLY 1000 DAYS OF OPERATION, THE SPACECRAFT MISSION WAS TERMINATED WITH THE DETERIORATION OF THE HORIZON SCANNER, WHICH WAS NEEDED FOR EARTH REFERENCE.

EXPERIMENT NAME- HIGH-RESOLUTION INFRARED RADIOMETER  
(HRIR)

NSSDC ID 66-040A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- L.L. FOSHEE, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 11/15/66

EXPERIMENT BRIEF DESCRIPTION

THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) EXPERIMENT CONSISTED OF A SINGLE CHANNEL SCANNING RADIOMETER THAT SENSED THE EMITTED THERMAL RADIATION OF THE EARTH IN THE 3.5-TO 4.1-MICRON 'WINDOW' REGION TO PRODUCE CLOUDCOVER PICTURES. IT ALSO MEASURED CLOUDTOP AND SURFACE TEMPERATURES DURING THE NIGHTTIME PORTION OF THE ORBIT. THE EXPERIMENT WAS A SUCCESS, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL ORBIT 2455 ON NOVEMBER 15, 1966, WHEN THE TAPE RECORDER FAILED. A COMPLETE DESCRIPTION OF THE HRIR

EXPERIMENT IS CONTAINED IN THE 'NIMBUS II USERS' GUIDE,' WHICH IS AVAILABLE FROM NSSDC.

DATA SET NAME- HRIR METEOROLOGICAL RADIATION DATA ON  
TAPE

NSSDC ID 66-040A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/15/66 TO 11/15/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 1767 MAGNETIC TAPES CALLED NIMBUS METEOROLOGICAL RADIATION TAPES - HRIR (NMRT-HRIR). THESE TAPES WERE GENERATED ON AN IBM 7094 COMPUTER AND CONTAIN RADIATION VALUES EMITTED WITHIN THE 3.5- TO 4.1-MICRON ATMOSPHERIC WINDOW. THE DATA ARE IN BINARY MODE AT A DENSITY OF 800 BPI WITH ONE ORBIT PER FILE. THE FIRST RECORD OF EACH ORBIT CONTAINS DOCUMENTATION RECORDS AND INFORMATION DESCRIBING THE ORBIT. SUBSEQUENT RECORDS CONTAIN THE RADIATION VALUES, LOCATION, AND TIME OF EACH OBSERVATION. THE FORMAT OF THE NMRT-HRIR IS GIVEN IN APPENDIX A OF THE 'NIMBUS II USERS' GUIDE.'

DATA SET NAME- HRIR PHOTOFACSIMILE FILM STRIPS

NSSDC ID 66-040A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/20/66 TO 11/15/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 70-MM PHOTOFACSIMILE FILM STRIPS CONTAINING NIGHTTIME BLACKBODY TEMPERATURES FROM RADIATING CLOUD TOPS ON THE EARTH'S SURFACE IN THE 3.5- TO 4.1-MICRON ATMOSPHERIC WINDOW. EACH PICTURE SWATH IS GRIDDED WITH GEOGRAPHIC COORDINATES AND COVERS A DISTANCE APPROXIMATELY FROM POLE TO POLE. A TOTAL OF APPROXIMATELY 2450 FILM STRIPS ARE AVAILABLE, WITH ONE FILM STRIP COVERING ONE ORBIT. AS A RESULT OF DIRECT SUNLIGHT, THE PICTURES ARE DEGRADED CONSIDERABLY NEAR THE SOUTH POLAR REGIONS.

DATA SET NAME- DATA CATALOG OF EXPERIMENT OPERATIONS

NSSDC ID 66-040A-03C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 05/20/66 TO 11/15/66

DATA SET BRIEF DESCRIPTION

THE FIVE VOLUMES OF THE 'NIMBUS II DATA CATALOG' WERE PUBLISHED TO DOCUMENT METEOROLOGICAL DATA ACQUIRED BY THE NIMBUS 2 METEOROLOGICAL SATELLITE. THE

CATALOG PRESENTS GEOGRAPHIC LOCATION, TIME, AND TIME COVERAGE OF TAPE AND/OR PHOTOGRAPHIC FORMS OF THE DATA FROM THE ADVANCED VIDICON CAMERA SYSTEM (AVCS), THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR), AND THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR). THESE CATALOGS DO NOT CONTAIN BACKGROUND INFORMATION CONCERNING THE SATELLITE, NOR IS THERE A DESCRIPTION OF THE EXPERIMENTS OR DATA FORMATS. SUCH INFORMATION IS PUBLISHED IN THE 'NIMBUS II USERS' GUIDE,' WHICH IS A NECESSARY ADJUNCT TO EACH CATALOG VOLUME.

DATA SET NAME- HRIR WORLD MONTAGE CATALOG

NSSDC ID 66-040A-03D

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 05/20/66 TO 11/15/66

DATA SET BRIEF DESCRIPTION

THE 'NIMBUS II HIGH RESOLUTION INFRARED DATA WORLD MONTAGE CATALOG' WAS PUBLISHED TO PICTORIALY INDEX AND DOCUMENT THE DATA FROM THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR). THE MONTAGES SHOWN REPRESENT THE NIGHTTIME HRIR DATA OBTAINED DURING A 24-HR PERIOD. THIS CATALOG IS COMPLEMENTARY TO AND MAY BE USED IN CONJUNCTION WITH THE 'NIMBUS II DATA CATALOG,' VOLUMES 1 THROUGH 5 (SEE DATA SET 66-040A-03C.)

EXPERIMENT NAME- MEDIUM-RESOLUTION INFRARED RADIOMETER  
(MRIR)

NSSDC ID 66-040A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- A.W. MCCULLOCH, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 07/28/66

EXPERIMENT BRIEF DESCRIPTION

THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) EXPERIMENT MEASURED THE INTENSITY AND DISTRIBUTION OF ELECTROMAGNETIC RADIATION EMITTED BY AND REFLECTED FROM THE EARTH AND ITS ATMOSPHERE IN FIVE SELECTED WAVELENGTH INTERVALS FROM 0.2 TO 30 MICRONS. DATA FOR HEAT BALANCE OF THE EARTH-ATMOSPHERE SYSTEM WERE OBTAINED, AS WELL AS MEASUREMENTS OF WATER VAPOR DISTRIBUTION, SURFACE OR NEAR-SURFACE TEMPERATURES, AND SEASONAL CHANGES OF STRATOSPHERIC TEMPERATURE DISTRIBUTION. THE FIVE WAVELENGTH REGIONS WERE THE 6.4- TO 6.5-MICRON CHANNEL, WHICH COVERED THE 6.7-MICRON WATER ABSORPTION BAND, THE 10- TO 11-MICRON BAND, WHICH OPERATED IN THE 'ATMOSPHERIC WINDOW,' THE 14- TO 16-MICRON BAND, WHICH COVERED THE 15 MICRON CARBON-DIOXIDE ABSORPTION BAND, THE 5- TO 30-MICRON BAND, WHICH MEASURED THE EMITTED LONG WAVELENGTH INFRARED ENERGY FOR HEAT BUDGET PURPOSES, AND THE 0.2- TO 4.0-MICRON CHANNEL, WHICH YIELDED INFORMATION ON THE INTENSITY OF REFLECTED SOLAR ENERGY (ALBEDO). THE MRIR EXPERIMENT WAS SUCCESSFUL, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL THE TAPE RECORDER FAILED ON JULY 28, 1966. A COMPLETE DESCRIPTION OF THE MRIR EXPERIMENT IS

CONTAINED IN THE 'NIMBUS II USERS' GUIDE,' WHICH IS AVAILABLE FROM NSSDC.

DATA SET NAME- MRIR METEOROLOGICAL RADIATION DATA ON  
TAPE

NSSDC ID 66-040A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/15/66 TO 07/28/66

DATA SET BRIEF DESCRIPTION

THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) DATA ARE ON NINETY-EIGHT 7-TRACK, 800-BPI, BINARY MAGNETIC TAPES CALLED NIMBUS METEOROLOGICAL RADIATION TAPES -- MRIR (NMRT-MRIR). THESE TAPES WERE PRODUCED ON AN IBM 7094 COMPUTER. ON THE NMRT-MRIR, EACH DATA MEASUREMENT HAS BEEN CONVERTED TO EQUIVALENT UNITS OF ENERGY. THE LATITUDE, LONGITUDE, TIME, AND OTHER ORBITAL AND TELEMETRY DATA FOR EACH DATA MEASUREMENT ARE INCLUDED. THE TAPES CONTAIN COMPLETE DATA FROM ALL FIVE CHANNELS OF THE MRIR FROM MAY 15, 1966, TO JULY 28, 1966. THE FORMAT OF THE NMRT-MRIR IS DESCRIBED IN APPENDIX B OF THE 'NIMBUS II USERS' GUIDE.'

DATA SET NAME- MRIR PHOTO DISPLAY

NSSDC ID 66-040A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/15/66 TO 07/28/66

DATA SET BRIEF DESCRIPTION

THIS FORM OF THE MEDIUM-RESOLUTION INFRARED RADIATION (MRIR) DATA CONSISTS OF 4- BY 5-IN. PHOTOGRAPHIC FILM SHEETS. EACH FILM SHEET CONTAINS A COMPLETE DAYLIGHT PORTION OF AN ORBIT FOR EACH OF THE FIVE CHANNELS, THE ASSOCIATED LATITUDE GRID, THE TIME, AND THE GRAY SCALE REPRESENTING DIFFERENT TEMPERATURES. THE DIGITAL OUTPUT OF EACH CHANNEL WAS TRANSMITTED TO A CATHODE RAY TUBE PHOTO DISPLAY, AND THE PICTURE OF EACH CHANNEL WAS MADE BY PHOTOGRAPHING THE TUBE WITH A POLAROID CAMERA. THE MRIR PHOTO DISPLAYS CONTAIN COMPLETE DATA FOR THE LIFE OF THE EXPERIMENT.

DATA SET NAME- DATA CATALOG OF EXPERIMENT OPERATIONS

NSSDC ID 66-040A-04C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 05/15/66 TO 07/28/66

DATA SET BRIEF DESCRIPTION

THE FIVE VOLUMES OF THE 'NIMBUS II DATA CATALOG' WERE PUBLISHED TO DOCUMENT METEOROLOGICAL DATA ACQUIRED BY THE NIMBUS 2 METEOROLOGICAL SATELLITE. THE



CATALOG PRESENTS GEOGRAPHIC LOCATION AND TIME COVERAGE OF TAPE AND/OR PHOTOGRAPHIC FORMS OF THE DATA FROM THE ADVANCED VIDICCN CAMERA SYSTEM (AVCS), THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR), AND THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR). THESE CATALOGS DO NOT CONTAIN BACKGROUND INFORMATION CONCERNING THE SATELLITE, NOR IS THERE A DESCRIPTION OF THE EXPERIMENTS OR DATA FORMATS. SUCH INFORMATION IS CONTAINED IN THE 'NIMBUS II USERS' GUIDE,' WHICH IS A NECESSARY ADJUNCT TO EACH CATALOG VOLUME. MRIR DATA COVERAGE IS FROM MAY 15, 1966, TO JULY 28, 1966, AND IS CONTAINED IN THE FIRST TWO VOLUMES OF THE 'NIMBUS II DATA CATALOG.'

DATA SET NAME- MRIR PICTORIAL DATA CATALOG

NSSDC ID 66-040A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/15/66 TO 07/28/66

DATA SET BRIEF DESCRIPTION

THE TWO VOLUMES OF THE 'NIMBUS II MEDIUM RESOLUTION INFRARED PICTORIAL DATA CATALOG' WERE PUBLISHED TO PICTORIALY DOCUMENT THE DATA FROM THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) EXPERIMENT. THE PHOTOS SHOWN IN THE CATALOG REPRESENT THE 4- BY 5-IN. FILM SHEETS (DATA SET 66-040A-04B) THAT ARE AVAILABLE FROM THE MRIR EXPERIMENT. THIS CATALOG IS COMPLEMENTARY TO AND MAY BE USED IN CONJUNCTION WITH THE 'NIMBUS II DATA CATALOG,' VOLUMES 1 AND 2 (SEE DATA SET 66-040A-04C).

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SPACECRAFT NAME- EXPLORER 32

NSSDC ID 66-044A

OTHER NAMES- S 6A, ATMOSPHERIC EXPLORER B, AE-B,  
1966-044A

LAUNCH DATE- 05/25/66

DATE LAST SCIENTIFIC DATA RECORDED- 03/22/67

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT- 225 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 05/25/66 ORBIT PERIOD- 116 MIN.

APOGEE- 2725. KM ALT

PERIGEE- 276. KM ALT INCLINATION- 64.672 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 32 WAS AN AERONOMY SATELLITE WHICH WAS DESIGNED TO DIRECTLY MEASURE TEMPERATURES, COMPOSITION, DENSITIES, AND PRESSURES IN THE UPPER ATMOSPHERE ON A GLOBAL BASIS. THE SATELLITE WAS A STAINLESS STEEL, VACUUM-SEALED SPHERE, 0.889 M IN DIAMETER. THE EXPERIMENTAL PAYLOAD INCLUDED ONE ION AND TWO NEUTRAL MASS SPECTROMETERS, THREE MAGNETRON DENSITY GAUGES, AND TWO ELECTROSTATIC PROBES. ADDITIONAL EQUIPMENT INCLUDED OPTICAL AND MAGNETIC ASPECT SENSORS, MAGNETIC ATTITUDE AND SPIN RATE CONTROL SYSTEMS, AND A TAPE RECORDER FOR DATA ACQUISITION AT LOCATIONS REMOTE FROM GROUND RECEIVING STATIONS. POWER WAS SUPPLIED BY SILVER-ZINC

BATTERIES AND A SOLAR CELL ARRAY MOUNTED ON THE SATELLITE EXTERIOR. TWO IDENTICAL PM TELEMETRY SYSTEMS AND A CANTED TURNSTILE ANTENNA WERE EMPLOYED. THE TWO NEUTRAL PARTICLE MASS SPECTROMETERS FAILED ABOUT 5 DAYS AFTER LAUNCH. THE REMAINING EXPERIMENTS OPERATED SATISFACTORILY AND PROVIDED USEFUL DATA FOR MOST OF THE 10-MONTH SATELLITE LIFETIME. THE FINAL DATA WERE OBTAINED ON MARCH 22, 1967, AT WHICH TIME THE SPACECRAFT CEASED TO FUNCTION DUE TO BATTERY FAILURES WHICH RESULTED FROM DEPRESSURIZATION OF THE SPHERE.

EXPERIMENT NAME- NEUTRAL PARTICLE MAGNETIC MASS  
SPECTROMETER

NSSDC ID 66-044A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- C.A. REBER, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 05/31/66

#### EXPERIMENT BRIEF DESCRIPTION

TWO DOUBLE-FOCUSING MAGNETIC MASS SPECTROMETERS WERE USED TO MEASURE THE COMPOSITION OF THE NEUTRAL ATMOSPHERE BETWEEN 285 KM AND 1000 KM. ONE WAS MOUNTED ON THE EQUATOR OF THE SPHERICAL SATELLITE NORMAL TO THE SPIN AXIS, AND THE OTHER WAS MOUNTED ON THE TOP OF THE SATELLITE PARALLEL TO THE SPIN AXIS. THE NEUTRAL PARTICLES WERE IONIZED BY ELECTRON BOMBARDMENT AND SEPARATED ACCORDING TO MASS TO CHARGE RATIO ( $m/e$ ) IN THE ANALYZER SECTION OF THE INSTRUMENT. THERE WAS ONE COLLECTOR CUP FOR EACH OF SEVEN DIFFERENT ION SPECIES. AN ELECTROMETER AMPLIFIER, WHICH HAD TWO SENSITIVITY RANGES DIFFERING BY A FACTOR OF 100, SAMPLED THE SEVEN COLLECTORS SEQUENTIALLY. THE DWELL TIME ON A SPECIFIC MASS AND SENSITIVITY RANGE WAS 2.4 SEC. THE FIRST FOUR OF THE FIFTEEN 2.4-SEC STEPS OF A CYCLE WERE DEVOTED TO CORRECTING ANY ZERO DRIFT OF THE ELECTROMETER AND TO RECORDING THE LOW- AND HIGH-SENSITIVITY ZERO LEVELS. THE ION CURRENTS WERE THEN MEASURED IN HIGH SENSITIVITY FOR  $m/e$  EQUAL TO 2 (MOLECULAR HYDROGEN), 4 (HELIUM), AND 14 (ATOMIC NITROGEN) AND IN HIGH AND LOW SENSITIVITY FOR  $m/e$  EQUAL TO 28 (MOLECULAR NITROGEN), 32 (MOLECULAR OXYGEN), 16 (ATOMIC OXYGEN), AND 18 (WATER VAPOR). THE TIME FOR ONE COMPLETE CYCLE WAS 36 SEC. REAL-TIME DATA WERE OBTAINED AT 10 STADAN STATIONS IN PROGRAMMED 4-MIN TURN-ONS. THE EXPERIMENT WAS ALSO OPERATED FOR 4-MIN PERIODS IN A TAPE RECORDER MODE AT ABOUT 10 REMOTE LOCATIONS. INFORMATION WAS PLAYED BACK AT STADAN STATIONS. ELECTRONIC MALFUNCTIONS OF THE LOGIC OF THE TWO SPECTROMETERS CAUSED ONE INSTRUMENT TO FAIL AFTER 4 DAYS IN ORBIT AND THE OTHER AFTER 7 DAYS.

DATA SET NAME- NEUTRAL PARTICLE DENSITIES IN TABULAR  
FORM

NSSDC ID 66-044A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 05/26/66 TO 05/31/66

#### DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF NUMBER DENSITIES OF ATOMIC HYDROGEN.

HELIUM, MOLECULAR NITROGEN, AND ATOMIC OXYGEN. THE DATA ARE CONTAINED IN TABULAR FORM ON 10 PAGES OF A NASA X DOCUMENT (X-621-70-222) ENTITLED "NEUTRAL COMPOSITION AND DENSITY RESULTS FROM THE EXPLORER 32 MASS SPECTROMETERS," BY C. A. REBER, A. E. HEDIN, J.E. COOLEY, AND D. N. HARPOLD, PUBLISHED IN MAY 1970. THE DATA PRESENTED ARE BASED ON ABOUT EIGHTEEN 4-MIN TURN-ONS. THESE PARTICULAR TURN-ONS YIELDED THE BEST DATA DURING THE 7-DAY LIFETIME OF THE EXPERIMENT. PART OF THE DATA SET (EIGHT PAGES) CONTAINS LISTINGS OF NUMBER DENSITIES AND THE ASSOCIATED PERCENT ERROR VALUES RECORDED BY BOTH SPECTROMETERS FOR THE SPECIES REFERRED TO ABOVE. ALSO LISTED ARE WEIGHTED AVERAGES OF THE TWO SPECTROMETER DENSITY VALUES. THE TABULATIONS ALSO INCLUDE DATE, UT AND LOCAL SOLAR TIME, TURN-ON NUMBER, ALTITUDE, LATITUDE, AND LONGITUDE. IN THIS PART OF THE DATA SET, THE INFORMATION IS ORDERED ACCORDING TO TIME FOR EACH OF THE FOUR ATMOSPHERIC SPECIES. ANOTHER PART OF THE DATA SET (TWO PAGES) CONTAINS A LISTING OF THE PREVIOUSLY MENTIONED WEIGHTED AVERAGE DENSITY VALUES FOR EACH SPECIES, INTERPOLATED TO A COMMON ALTITUDE, NAMELY, THE ALTITUDE OF THE MOLECULAR NITROGEN DENSITY MEASUREMENT. ALSO INCLUDED IN THIS LIST ARE THE TOTAL MASS DENSITY AND THE MEAN MOLECULAR WEIGHT OF THE SPECIES IN THE NEUTRAL ATMOSPHERE AND THE TIME AND LOCATION INFORMATION AS STATED ABOVE.

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SPACECRAFT NAME- SURVEYOR 1  
OTHER NAMES- 1566-045A

NSSDC ID 66-045A

LAUNCH DATE- 05/30/66 DATE LAST SCIENTIFIC DATA RECORDED- 07/14/66

AGENCY- NASA SPACECRAFT WEIGHT IN ORBIT- 292 KG

ORBIT TYPE-	EPOCH-	/	/	ORBIT PERIOD-	MIN.
APOGEE-	KM ALT	PERIGEE-	KM ALT	INCLINATION-	DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE SURVEYOR SPACECRAFT WAS DESIGNED TO ATTAIN THE ENGINEERING OBJECTIVES OF THE SURVEYOR PROGRAM, WHICH INCLUDED THE FIRST LUNAR SOFT LANDING. NO INSTRUMENTATION WAS CARRIED SPECIFICALLY FOR SCIENTIFIC EXPERIMENTS, BUT CONSIDERABLE SCIENTIFIC INFORMATION WAS OBTAINED. THE SPACECRAFT CARRIED TWO TELEVISION CAMERAS -- ONE FOR APPROACH, WHICH WAS NOT USED, AND ONE FOR OPERATIONS ON THE LUNAR SURFACE. OVER 100 ENGINEERING SENSORS WERE ON BOARD. THE TELEVISION SYSTEM TRANSMITTED PICTURES OF THE SPACECRAFT FOOTPAD AND SURROUNDING LUNAR TERRAIN AND SURFACE MATERIALS. THE SPACECRAFT ALSO ACQUIRED DATA ON THE RADAR REFLECTIVITY OF THE LUNAR SURFACE, BEARING STRENGTH OF THE LUNAR SURFACE, AND SPACECRAFT TEMPERATURES FOR USE IN THE ANALYSIS OF THE LUNAR SURFACE TEMPERATURES. THE SPACECRAFT WAS LAUNCHED MAY 30, 1966, DIRECTLY INTO A LUNAR IMPACT TRAJECTORY. ENGINES WERE TURNED OFF AT A HEIGHT OF 3.4 M ABOVE THE LUNAR SURFACE. THE SPACECRAFT FELL FREELY FROM THIS HEIGHT, LANDING ON THE LUNAR SURFACE ON JUNE 2, 1966, IN OCEANUS PROCELLARUM -- 2.45 DEG S LATITUDE, 43.22 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES). THE SPACECRAFT TRANSMITTED DATA FROM SHORTLY AFTER TOUCHDOWN UNTIL JULY 14, 1966, WITH AN INTERVAL OF NO OPERATION DURING LUNAR NIGHT (JUNE 14 TO JULY 7, 1966). ENGINEERING INTERROGATIONS CONTINUED UNTIL JANUARY 7, 1967.

EXPERIMENT NAME- TELEVISION

NSSDC ID 66-045A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- E.M. SHOEMAKER, CAL TECH , PASADENA, CALIF.  
R.M. BATSON, US GEOLOGICAL SURVEY , FLAGSTAFF, ARIZ.

DATE LAST USEFUL DATA RECORDED- 07/14/66

EXPERIMENT BRIEF DESCRIPTION

THE TV CAMERA CONSISTED OF A VIDICON TUBE, 25- AND 100-MM FOCAL LENGTH LENSES, SHUTTER, FILTERS, AND IRIS MOUNTED ALONG AN AXIS INCLINED APPROXIMATELY 16 DEG TO THE CENTRAL AXIS OF THE SPACECRAFT. THE CAMERA WAS MOUNTED UNDER A MIRROR THAT COULD BE MOVED IN AZIMUTH AND ELEVATION. CAMERA OPERATION WAS TOTALLY DEPENDENT UPON THE RECEIPT OF THE PROPER COMMAND STRUCTURE FROM EARTH. FRAME-BY-FRAME COVERAGE OF THE LUNAR SURFACE WAS OBTAINED OVER 360 DEG IN AZIMUTH AND FROM +40 DEG ABOVE THE PLANE NORMAL TO THE CAMERA Z AXIS TO -65 DEG BELOW THIS PLANE. BOTH 600-LINE AND 200-LINE MODES OF OPERATION WERE USED. THE 200-LINE MODE TRANSMITTED OVER AN OMNIDIRECTIONAL ANTENNA FOR THE FIRST 14 PHOTOS AND SCANNED ONE FRAME EVERY 61.8 SEC. THE REMAINING TRANSMISSIONS WERE OF 600-LINE PICTURES OVER A DIRECTIONAL ANTENNA, AND EACH FRAME WAS SCANNED EVERY 3.6 SEC. EACH 200-LINE PICTURE REQUIRED 20 SEC FOR A COMPLETE VIDEO TRANSMISSION AND UTILIZED A BANDWIDTH OF 1.2 KHZ. EACH 600-LINE PICTURE REQUIRED NOMINALLY 1 SEC TO BE READ FROM THE VIDICON AND REQUIRED A 220-KHZ BANDWIDTH FOR TRANSMISSION. THE DATA TRANSMISSIONS WERE CONVERTED TO A STANDARD TELEVISION SIGNAL FOR CLOSED-CIRCUIT AND PUBLIC BROADCAST TELEVISION. THE TELEVISION IMAGES WERE DISPLAYED ON EARTH ON A SLOW SCAN MONITOR COATED WITH A LONG PERSISTENCY PHOSPHOR. THE PERSISTENCY WAS SELECTED TO OPTIMALLY MATCH THE NOMINAL MAXIMUM FRAME RATE. ONE FRAME OF TV IDENTIFICATION WAS RECEIVED FOR EACH INCOMING TV FRAME AND WAS DISPLAYED IN REAL TIME AT A RATE COMPATIBLE WITH THE INCOMING IMAGE. THESE DATA WERE RECORDED ON A VIDEO MAGNETIC TAPE RECORDER. OVER 10,000 PICTURES WERE TAKEN BY THE SURVEYOR 1 CAMERA BEFORE LUNAR SUNSET ON JUNE 14, 1966. INCLUDED WERE WIDE- AND NARROW-ANGLE PANORAMAS, FOCUS-RANGING SURVEYS, PHOTOMETRIC SURVEYS, SPECIAL AREA SURVEYS, AND CELESTIAL PHOTOGRAPHY. THE SPACECRAFT RESPONDED TO COMMANDS TO ACTIVATE THE CAMERA ON JULY 7 AND, BY JULY 14, 1966, RETURNED NEARLY ANOTHER 1000 FRAMES.

DATA SET NAME- ORIGINAL 70-MM PHOTOGRAPHY

NSSDC ID 66-045A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/02/66 TO 07/13/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS LUNAR SURFACE PHOTOGRAPHY FROM THE FIRST LUNAR DAY

OF THE EXPERIMENT. INCLUDED ARE WIDE- AND NARROW-ANGLE PANORAMAS, FOCUS-RANGING SURVEYS, PHOTOMETRIC SURVEYS, SPECIAL AREA SURVEYS, AND CELESTIAL PHOTOGRAPHY. THE PHOTOGRAPHS ARE SECOND GENERATION FILM NEGATIVES ON 70-MM REELS IN 18 CANISTERS. THE NEGATIVE FILM WAS PRODUCED FROM THE ORIGINAL NEGATIVE VIA A MASTER POSITIVE.

DATA SET NAME- DIGITALLY PROCESSED 35-MM NEGATIVE  
PHOTOGRAPHY

NSSDC ID 66-045A-018

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/05/66 TO 07/13/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 178 SELECTED PHOTOGRAPHS ON 35-MM FIRST GENERATION NEGATIVE FILM. THEY WERE PROCESSED BY ANALOG-TO-DIGITAL CONVERSION OF DATA TRANSMITTED BY THE SPACECRAFT. THERE ARE 88 NEGATIVES FROM THE DEBLOCK AND REGISTER (D+R) PROGRAM AND 90 FROM THE SINE WAVE RESPONSE FILTER (SWRF) PROGRAM. THE D+R PROGRAM ADAPTS THE ANALOG-TO-DIGITAL CONVERSION OUTPUT TO A FORM MORE EASILY ADAPTABLE TO PROCESSING OPERATIONS. THE OUTPUT CONSISTS OF 600 DIGITAL RECORDS ON WRITTEN MAGNETIC TAPE AT 800 BPI REPRESENTING 600 PICTURE LINES. EACH RECORD NORMALLY CONTAINS 684 CHARACTERS CORRESPONDING TO THE PICTURE ELEMENTS (PIXELS) WITHIN A LINE. THIS IMAGE IS DIGITIZED ONLY. THE SWRF PROGRAM IS APPLIED TO THE RAW IMAGE AND RESTORES HIGH-FREQUENCY DATA (FINE DETAIL IN PICTURE) BOTH IN THE HORIZONTAL DIRECTION ALONG THE CAMERA SCAN LINES AND IN THE VERTICAL DIRECTION. PICTURES PROCESSED BY SWRF WILL APPEAR MORE NOISY THAN THE ORIGINAL BUT WILL BE MUCH SHARPER.

DATA SET NAME- CATALOG OF TV PICTURES

NSSDC ID 66-045A-01C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 06/02/66 TO 07/13/66

DATA SET BRIEF DESCRIPTION

THE CATALOG OF TV PICTURES CONTAINS MOST OF THE PICTURES TRANSMITTED BY THE SPACECRAFT EXCEPT FOR PICTURES OF STARS, SPECIAL PURPOSE PHOTOGRAPHS THAT REQUIRE ENLARGEMENTS, AND SPECIAL PURPOSE SHADOW SURVEYS RECEIVED BY OVERSEAS DEEP SPACE NETWORK STATIONS. THE PICTURES INCLUDED ARE IN MOSAIC FORMAT EXCEPT FOR THOSE APPLICABLE FOR FOCUS-RANGING SURVEYS, VERIFICATION OF CAMERA PARAMETERS, OR EXAMINATIONS OF SMALL AREAS OF INTEREST. THESE PICTURES ARE SITUATED SEPARATELY ON THE PLATE WITHOUT REGARD TO LOCATION IN AZIMUTH AND ELEVATION. EACH PICTURE IS IDENTIFIED BY GMT, AZIMUTH, ELEVATION, FOCUS, IRIS, AND DESCRIPTIVE REMARKS. THE INFORMATION ON THE AVAILABILITY AND ORDERING PROCEDURES FOR HIGH QUALITY PHOTOGRAPHIC REPRODUCTIONS IS ALSO INCLUDED IN 'THE CATALOG OF SURVEYOR 1 TELEVISION PICTURES,' NSSDC 68-10.

DATA SET NAME- 4- BY 5-IN. MOSAIC NEGATIVE FILM SHEETS

NSSDC ID 66-045A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/02/66 TO 07/13/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 320 MOSAIC PHOTOGRAPHS ON 4- BY 5-IN. BLACK AND WHITE NEGATIVE FILM SHEETS. THE MOSAICS WERE COMPILED FROM THE SURVEYOR 1 PHOTOGRAPHS TAKEN BETWEEN JUNE 2 AND JULY 13, 1966. INCLUDED ARE ANALYTICAL, IMPROVED, RECTIFIED, AND SPHERICAL MOSAICS. ANALYTICAL MOSAICS ARE MADE BY PLACING THE PICTURES AT THEIR CORRECT NOMINAL LOCATION ON A PREPARED GRID WITHOUT ATTEMPTING TO MATCH IMAGES. IMPROVED MOSAICS PRESENT A MORE COHERENT VIEW OF SMALL AREAS OF THE PANORAMA BECAUSE PICTURE IMAGES ARE CAREFULLY MATCHED. RECTIFIED MOSAICS ARE MADE BY TRANSFORMING THE IMAGE PLANE OF THE INDIVIDUAL PICTURES TO A PLANE OTHER THAN THAT PERPENDICULAR TO THE LINE OF SIGHT OF THE CAMERA. SPHERICAL, SEMI-IMPROVED, OR SEMI-ENHANCED MOSAICS ARE MADE FOR THE INSIDE OF LARGE HEMISPHERES BUT OTHERWISE ARE SIMILAR TO THE IMPROVED MOSAICS. THIS PROCESS DOES NOT DISTORT PANORAMIC IMAGES AS IN THE FLAT PROCESSING.

DATA SET NAME- TELEVISION PHOTOGRAPHY IDENTIFICATION ON MICROFILM

NSSDC ID 66-045A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/02/66 TO 07/13/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS IDENTIFYING INFORMATION FOR SURVEYOR 1 PHOTOGRAPHS INCLUDING, FOR EACH PHOTOGRAPH, DAY OF YEAR, HOUR, MINUTE, SECOND, FILE NUMBER, SURVEY NUMBER, AZIMUTH ANGLE OF CAMERA MIRROR, ELEVATION ANGLE OF CAMERA MIRROR, FOCUS, IRIS SETTING, FILTER WHEEL POSITION, AND CAMERA FOCAL LENGTH. THIS DATA SET IS CONTAINED ON THREE REELS OF 16-MM MICROFILM THAT WERE PRODUCED FROM 14 VOLUMES OF HARD COPY SUPPLIED BY THE SURVEYOR PROJECT OFFICE AT JPL.

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SPACECRAFT NAME- GEMINI 9

NSSDC ID 66-047A

OTHER NAMES- GEMINI 9-A, 1966-047A

LAUNCH DATE- 06/03/66

DATE LAST SCIENTIFIC DATA RECORDED- 06/06/66

AGENCY- NASA-QMSF

SPACECRAFT WEIGHT IN ORBIT- 3750 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 06/06/66 ORBIT PERIOD- 89.8 MIN.

APOGEE- 272. KM ALT

PERIGEE- 270. KM ALT INCLINATION- 28.9 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

GEMINI 9, MANNED WITH TWO ASTRONAUTS, WAS THE SEVENTH EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE BLUNT, CONE-SHAPED SPACECRAFT WAS 3.048 M IN DIAMETER AT THE REAR OF THE CRAFT. PRIMARY MISSION OBJECTIVES WERE TO DEMONSTRATE (1) THREE RENDEZVOUS TECHNIQUES, (2) AN EXTRAVEHICULAR ACTIVITY (EVA) TO TEST THE ASTRONAUT MANEUVERING UNIT (AMU), AND (3) PRECISION LANDING CAPABILITY. SCIENTIFIC OBJECTIVES INCLUDED OBTAINING ZODIACAL LIGHT AND AIRGLOW HORIZON PHOTOGRAPHS. TWO MICROMETEORITE STUDIES WERE TO BE CARRIED OUT, AND THERE WERE ALSO ONE MEDICAL AND TWO TECHNOLOGICAL EXPERIMENTS. THE AGENA TARGET VEHICLE FAILED TO ACHIEVE ORBIT, AND THE AGENA MICROMETEORITE EXPERIMENT HARDWARE WAS LOST. OTHER EXPERIMENTS FUNCTIONED NORMALLY. THE THREE RENDEZVOUS TECHNIQUES WERE DEMONSTRATED, ALTHOUGH DOCKING COULD NOT BE ACHIEVED DUE TO A FAILURE OF THE AUGMENTED TARGET-DOCKING SHROUD TO JETTISON. THE EVA WAS CURTAILED DUE TO FOGGING OF THE VISOR AND ENERGY EXPENDED BY THE ASTRONAUT. REENTRY WAS ROUTINELY ACCOMPLISHED AFTER 47 ORBITS ON JUNE 6, 1966, WITHIN 2 MILES OF THE TARGET POINT.

EXPERIMENT NAME- ZODIACAL LIGHT PHOTOGRAPHY

NSSDC ID 66-047A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- E.P. NEY, U OF MINNESOTA, MINNEAPOLIS, MINN.

DATE LAST USEFUL DATA RECORDED- 06/06/66

#### EXPERIMENT BRIEF DESCRIPTION

A HAND-HELD CAMERA (F/1) EQUIPPED WITH AUTOMATIC TRIGGERING WAS USED BY GEMINI CREWMEN TO OBTAIN PHOTOGRAPHS OF AIRGLOW, ZODIACAL LIGHT, THE MILKY WAY, AND STAR FIELDS. THIS CAMERA, WHICH WAS SPECIALLY CONSTRUCTED FOR THE EXPERIMENT, HAD A 50-DEG BY 130-DEG FIELD OF VIEW. A TRANSISTORIZED TIMER ON THE CAMERA WAS PROGRAMMED TO TAKE 30-SEC EXPOSURES, WITH THE SHUTTER CLOSED FOR 10 SEC BETWEEN FRAMES TO ALLOW FOR SPACECRAFT REORIENTATION.

DATA SET NAME- ZODIACAL LIGHT PHOTOGRAPHY ON 35-MM FILM

NSSDC ID 66-047A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/03/66 TO 06/06/66

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM TRI-X NEGATIVES OF THE 17 EXPOSURES MADE ON GEMINI 9 AND IS AVAILABLE ON ONE REEL OF FILM TOGETHER WITH ZODIACAL LIGHT PHOTOGRAPHY FROM GEMINIS 5 AND 10. GOOD EXPOSURES WERE MADE SHOWING AIRGLOW, STAR FIELDS, ZODIACAL LIGHT, AND TWILIGHT. FOR FRAME NUMBERS AND A BRIEF INDEX TO THE PHOTOGRAPHS, SEE NSSDC 70-08, 'DESCRIPTIVE INDEX TO GEMINI ZODIACAL LIGHT PHOTOGRAPHY.'

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SPACECRAFT NAME- OGO 3  
OTHER NAMES- OGO-B, EOGO 3, 1966-049A  
LAUNCH DATE- 06/07/66 DATE LAST SCIENTIFIC DATA RECORDED- 12/01/69  
AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 515 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 06/19/66 ORBIT PERIOD- 2915 MIN.  
APOGEE-122173. KM ALT PERIGEE- 319. KM ALT INCLINATION- 31.4 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 3 SPACECRAFT, THE THIRD OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS IN ORDER TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET. OGO 3 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS DESIGNED TO BE EARTH POINTING (+Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS INTENDED TO BE PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS. THE OPEP'S WERE MOUNTED ON, AND COULD ROTATE ABOUT, AN AXIS WHICH WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE MAIN BODY. DUE TO A FAILURE IN THE ATTITUDE CONTROL SUBSYSTEM ON JULY 23, 1966, THE SPACECRAFT WAS PUT INTO A PERMANENT SPIN MODE ABOUT THE Z AXIS. BOTH THE ORIENTATION OF THE SPIN AXIS AND THE SPIN PERIOD WERE VARIABLE, THE LATTER USUALLY IN THE RANGE 90 SEC TO 125 SEC. AT LAUNCH, THE LOCAL TIME OF APOGEE WAS 2300 HR. OGO 3 CARRIED 21 EXPERIMENTS. THIRTEEN OF THESE WERE PARTICLE STUDIES, AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EACH OF THE FOLLOWING TYPES OF EXPERIMENTS -- INTERPLANETARY DUST, VLF, LYMAN-ALPHA, GEGENSCHNEIN, ATMOSPHERIC MASS, AND RADIO ASTRONOMY. REAL-TIME DATA WERE TRANSMITTED AT 1, 2, AND 64 KBS DEPENDING ON THE DISTANCE FROM THE SPACECRAFT TO EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDE-BAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDE-BAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. BY JUNE 1969, DATA ACQUISITION WAS LIMITED TO 50 PERCENT OF THE ORBITAL PATH. ON DECEMBER 1, 1969, OGO 3 WAS PLACED IN A SAFE-STANDBY MODE. AT THE PRESENT TIME (MARCH 1971), THE SPACECRAFT IS TURNED OFF, BUT IT IS STILL CAPABLE OF PRODUCING DATA.

DATA SET NAME- ANALYZED, CONDENSED, ORBIT/ATTITUDE TAPE  
COVERING DATA TIME SPAN OF 66-049A-10  
NSSDC ID 66-049A-006  
AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED



TIME SPAN OF DATA- 06/09/66 TO 01/25/67

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONTAINS, ON ONE TAPE, A CONDENSED SET OF THE ORBIT/ATTITUDE PARAMETERS REQUIRED FOR ANALYSIS OF CGO 3 EXPERIMENT NUMBER 10 (KONRADI) FOR THE COMPLETE LIFE OF THAT EXPERIMENT. THE DATA WERE SUPPLIED BY THE EXPERIMENTER, WHO EXTRACTED THEM FROM THE ORBIT/ATTITUDE TAPES SUPPLIED BY THE OGO PROJECT. THE TAPE IS 9-TRACK WRITTEN ON AN IBM 360/75 COMPUTER IN ODD PARITY (BINARY MODE) AT 1600 BPI. IT HAS A STANDARD OS/360 HEADER LABEL WITH VOLUME SERIAL NUMBER W00194 AND CONTAINS ONE FILE OF INFORMATION. THE INFORMATION IS WRITTEN IN FIXED BLOCKED RECORDS 10,600 BYTES LONG. EACH BLOCKED RECORD CONTAINS 100 LOGICAL RECORDS, EACH 106 BYTES LONG. EACH LOGICAL RECORD CONTAINS 28 FIELDS OF INFORMATION. THE INFORMATION INCLUDES -- DATE AND TIME (UT), ORBIT NUMBER, SATELLITE POSITION IN BOTH INERTIAL AND B.L COORDINATES, MODEL GEOMAGNETIC FIELD STRENGTH AND DIRECTION AT THE SATELLITE, WHETHER THE SATELLITE WAS IN A STABILIZED OR SPINNING MODE OR MODE UNKNOWN, THE SPIN PERIOD AND AXIS DIRECTION, AND THE ORIENTATION OF THE OPEP.

EXPERIMENT NAME- SOLAR COSMIC RAYS

NSSDC ID 66-049A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- K.A. ANDERSON, U OF CALIFORNIA, BERK , BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 12/01/69

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A CESIUM IODIDE CRYSTAL SURROUNDED BY A PLASTIC ANTICINCIDENCE SHIELD AND OPTICALLY COUPLED TO A PHOTOMULTIPLIER TUBE. THE SYSTEM ALSO CONTAINED A 32-CHANNEL PULSE HEIGHT ANALYZER. ALTHOUGH THE PRINCIPAL OBJECTIVE OF THIS EXPERIMENT WAS TO MEASURE 3- TO 90-MEV SOLAR PROTONS, THE DETECTOR HAD NO ABILITY TO DISCRIMINATE BETWEEN DIFFERENT KINDS OF PARTICLES. THE SYSTEM WAS MOUNTED IN ONE OF THE TWO SOEPS AND HAD A 38-DEG ACCEPTANCE CONE ANGLE. INFLIGHT CALIBRATION WAS PROVIDED. COUNTS IN GROUPS OF FOUR CHANNELS, ACCUMULATED OVER 31/32 OF THE TELEMETRY FRAME TIME (1.152, 0.144, OR 0.018 SEC), WERE READ OUT DURING SUCCESSIVE TELEMETRY FRAMES. THUS, COMPLETE SPECTRAL ANALYSIS REQUIRED EIGHT FRAMES. ALTHOUGH THE DETECTOR AXIS WAS INTENDED TO POINT TOWARD THE SUN, A MALFUNCTION IN THE OGO 3 ATTITUDE CONTROL SYSTEM PREVENTED THIS. SHORTLY BEFORE LAUNCH, IT WAS DETERMINED THAT CHANNEL 1 FAILED TO OPERATE. SHORTLY AFTER LAUNCH, IT WAS FOUND THAT COUNTS IN CHANNELS 4N PLUS 1 (N = 1, 2, 3, 4, 5, 6, 7) WERE INCORRECT (HIGH). THE REMAINDER OF THIS EXPERIMENT WAS PERFORMING NORMALLY AT THE TIME OGO 3 WAS TURNED OFF, DECEMBER 1, 1969.

DATA SET NAME- SOLAR PARTICLE COUNT RATES ON TAPE

NSSDC ID 66-049A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/24/66 TO 02/27/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THIRTY 7-TRACK, 556-BPI, BINARY TAPES GENERATED BY THE EXPERIMENTER ON AN IBM 360/40 SYSTEM. EACH TAPE CONTAINS A VARIABLE NUMBER OF FILES, AND EACH FILE CONTAINS A VARIABLE NUMBER OF RECORDS CHOSEN FOR THEIR SOLAR FLARE INFORMATION. THE FIRST 120 CHARACTERS OF EACH FILE IS AN IDENTIFICATION HEADER THAT INCLUDES THE FILE AND TAPE NUMBERS OF THE ORIGINAL DATA TAPES, THE RATE AT WHICH THE DATA WERE TELEMETERED, WHETHER THE DATA WERE REAL TIME OR PLAYBACK, AND THE START TIME OF THE DATA IN YEAR, DAY OF THE YEAR, AND SECONDS OF THE DAY. EACH DATA RECORD CONSISTS OF 1044 SIX-BIT CHARACTERS. THE FIRST 12 CHARACTERS CONTAIN SOEP ENVIRONMENT INFORMATION. THE NEXT EIGHT CHARACTERS CONTAIN THE DAY OF THE YEAR AND MILLISECOND OF THE DAY FOR THE FIRST DATA VALUE. THE REMAINING 1024 CHARACTERS CONTAIN 12 ACCUMULATIONS FOR EACH OF THE 32 CHANNELS. FOR TELEMETRY RATES OF 1, 2, AND 64 KBS, EACH RECORD CONTAINS 147.456, 18.432, AND 2.304 SEC OF DATA, RESPECTIVELY. THE DATA SET, WHICH IS TIME ORDERED, CONTAINS DATA FOR 15 FLARES BETWEEN JUNE 24, 1966, AND FEBRUARY 27, 1967.

EXPERIMENT NAME- COSMIC-RAY SPECTRA AND FLUXES

NSSDC ID 66-049A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.

DATE LAST USEFUL DATA RECORDED- 12/01/69

EXPERIMENT BRIEF DESCRIPTION

THREE SOLID-STATE PARTICLE TELESCOPES WERE USED TO MEASURE THE INTENSITY AND ENERGY DISTRIBUTION OF COSMIC RAYS. A DE/DX VS E TELESCOPE (COMPOSITION TELESCOPE) RESOLVED THE NUCLEAR COMPOSITION OF COSMIC RAYS IN THE ENERGY RANGE FROM 30 TO 100 MEV/NUCLEON (CHARGE RESOLUTION RANGE THROUGH Z=26, IRON). A DE/DX VS RANGE TELESCOPE (PROTON-ALPHA TELESCOPE) DETECTED PROTONS AND ALPHA PARTICLES IN THE ENERGY RANGE FROM 1.6 TO 33 MEV/NUCLEON, AND A SINGLE ELEMENT LOW-ENERGY PROTON TELESCOPE (OPEP TELESCOPE) WAS PRIMARILY SENSITIVE TO PROTONS IN THE ENERGY RANGE FROM 1.4 TO 3.7 MEV. THE COMPOSITION AND PROTON-ALPHA TELESCOPES WERE ORIENTED PARALLEL TO THE SPACECRAFT Z AXIS, WHEREAS THE OPEP TELESCOPE WAS ORIENTED PERPENDICULAR TO THE Z AXIS. PULSE HEIGHT INFORMATION WAS OBTAINED FROM THE COMPOSITION TELESCOPE USING ONE 256-CHANNEL AND TWO 512-CHANNEL PULSE HEIGHT ANALYZERS. THIS ALLOWED PULSE HEIGHT ANALYSIS OF PARTICLES IN FOUR ENERGY INTERVALS -- FOR PROTONS 5 TO 11 MEV, 11 TO 22 MEV, 22 TO 103 MEV, AND GREATER THAN 103 MEV. PULSE HEIGHT INFORMATION WAS SENT BACK FROM THE PROTON-ALPHA TELESCOPE USING ONE 256-CHANNEL PULSE HEIGHT ANALYZER. THIS ALLOWED PULSE HEIGHT ANALYSIS OF PARTICLES IN TWO ENERGY RANGES -- FOR PROTONS 1.6 TO 8.6 MEV AND 8.6 TO 33 MEV. COUNT RATE INFORMATION WAS OBTAINED FROM ALL THREE TELESCOPES. THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.02 SEC TO ABOUT ONE MEASUREMENT PER 147 SEC DEPENDING ON THE COUNTING MODE AND THE TELEMETRY BIT RATE. THE SPACECRAFT UNINTENDED INITIAL SPIN PERIOD VARIED FROM ABOUT 91 TO 122 SEC ABOUT THE Z AXIS. THE EXPERIMENT WAS FULLY OPERATIONAL AS OF DECEMBER 1, 1969, WHEN THE SATELLITE WAS PLACED IN AN OPERATIONAL SAFE-STANDBY MODE.

DATA SET NAME- REDUCED COUNT RATE DATA ON MAGNETIC TAPE

NSSDC ID 66-049A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/09/66 TO 08/16/68

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A COPY OF ORIGINAL REDUCED DATA ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY TAPES WRITTEN AT 800 BPI. THE TAPES CONTAIN COUNT RATES ORDERED BY SOLAR ROTATION NUMBER BUT DO NOT CONTAIN PULSE HEIGHT OR ORBITAL DATA. EACH TAPE HAS A 24-CHARACTER (SIX BITS PER CHARACTER) HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF FILES. EACH FILE HAS A 144-CHARACTER HEADER RECORD, FOLLOWED BY A VARIABLE NUMBER OF RECORDS WHICH HAVE A TOTAL LENGTH OF 3972 CHARACTERS, FOLLOWED BY A FILE TRAILER RECORD (24 CHARACTERS).

DATA SET NAME- DIGITAL AND ANALOG COUNT RATE PLOTS ON  
MICROFILM

NSSDC ID 66-049A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/09/66 TO 07/15/68

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF A STANDARD SET OF DIGITAL AND ANALOG PLOTS, ON ONE REEL OF 35-MM MICROFILM, OF THE MOST INTERESTING OGO 3 HALF-HOUR AVERAGE RATES. THE DATA WERE GENERATED USING A CALCCMP PLOTTER. EACH PLOT COVERS ONE SOLAR ROTATION. THESE RATES WERE OBTAINED FROM COINCIDENCES AND ANTICOINCIDENCES OF COUNTERS, AS WELL AS FROM SOME STRAIGHT COUNTER RATES.

DATA SET NAME- PULSE HEIGHT ANALYZER DATA ON MAGNETIC  
TAPE

NSSDC ID 66-049A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/09/66 TO 08/16/68

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON TWENTY-SEVEN 7-TRACK, IBM 7094, BINARY MAGNETIC TAPES WRITTEN AT 800 BPI AND ORDERED BY SOLAR ROTATION NUMBER. THE PULSE HEIGHT ANALYSIS WAS CARRIED OUT FOR TWO OF THE DE/DX VS RANGE TELESCOPE COINCIDENCE COMBINATIONS CORRESPONDING TO PROTON ENERGIES FROM 1.6 TO 8.6 MEV AND FROM 8.6 TO 33 MEV (D1' NOT D2' NOT D4' AND D1'D2' NOT D4'). EACH TAPE HAS A 56-CHARACTER HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF FILES. EACH FILE HAS A 25-CHARACTER HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF RECORDS (4098 CHARACTERS/RECORD).

DATA SET NAME- U OF CHICAGO COUNTING RATE TAPE LOG FOR  
66-049A-03A

NSSDC ID 66-049A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/05/66 TO 08/16/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A LOG OF THE COUNTING RATE DATA SET (66-049A-03A) ON ONE REEL OF 16-MM MICROFILM. PROVIDED BY THE PRINCIPAL INVESTIGATOR, THE DATA ARE IN TABULAR FORM, ORDERED BY SOLAR ROTATION NUMBER. EACH LINE IN THIS LOG REFERS TO A SINGLE FILE IN THE ORIGINAL TAPES, AND EACH LINE CONTAINS AN ORIGINAL U OF CHICAGO TAPE NUMBER, THE START AND STOP TIMES OF OBSERVATION, THE TELEMETRY BIT RATE (1, 8, OR 64 KBS), THE NUMBER OF PHYSICAL RECORDS, AND DATA QUALITY INFORMATION. THE LOG CONSISTS OF ABOUT 500 PAGES.

DATA SET NAME- U OF CHICAGO PROTON-ALPHA TELESCOPE  
PULSE HEIGHT ANALYZER TAPE LOG

NSSDC ID 66-049A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/05/66 TO 08/16/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A LOG OF THE PULSE HEIGHT DATA SET (66-049A-03C) ON ONE REEL OF 16-MM MICROFILM. PROVIDED BY THE PRINCIPAL INVESTIGATOR, THE DATA ARE IN TABULAR FORM ORDERED BY SOLAR ROTATION NUMBER. EACH LINE IN THIS LOG REFERS TO A SINGLE FILE IN THE ORIGINAL MAGNETIC TAPES, AND EACH LINE CONTAINS AN ORIGINAL U OF CHICAGO TAPE NUMBER, THE START AND STOP TIMES OF OBSERVATION, THE TELEMETRY BIT RATE (1, 8, AND 64 KBS), THE NUMBER OF PHYSICAL RECORDS, AND DATA QUALITY INFORMATION. THE LOG CONSISTS OF ABOUT 200 PAGES.

EXPERIMENT NAME- LOW-ENERGY ELECTRONS AND PROTONS

NSSDC ID 66-049A-08

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- L.A. FRANK, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 05/23/67

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIFFERENTIAL ENERGY SPECTRA OF PROTONS AND ELECTRONS OVER THE ENERGY RANGE 50 EV TO 49 KEV (SUBDIVIDED INTO 15 ENERGY INTERVALS) WITHIN AND IN THE VICINITY OF THE EARTH'S

MAGNETOSPHERE. THE INSTRUMENTATION CONSISTED OF TWO CURVED-PLATE, CYLINDRICAL, ELECTROSTATIC ANALYZERS (LEPEDEA - LOW ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER) AND TWO BENDIX CONTINUOUS CHANNEL MULTIPLIERS ('CHANNELTRONS'). THE ACCUMULATION TIME PER CHANNEL WAS ABOUT 1 SEC. APPROXIMATELY 5 MIN WERE REQUIRED TO COMPLETE A SCAN OF THE ENTIRE ENERGY RANGE. AFTER THE SPACECRAFT ATTITUDE CONTROL SYSTEM FAILED ON JULY 23, 1966, ONE OF THE LEPEDEA'S WAS ORIENTED PARALLEL TO THE SPACECRAFT SPIN AXIS, AND THE OTHER WAS ORIENTED PERPENDICULAR TO THE SPIN AXIS. (THE SPIN PERIOD VARIED FROM ABOUT 91 TO 122 SEC.) THE EXPERIMENT PERFORMED NORMALLY UNTIL IT FAILED MAY 23, 1967.

DATA SET NAME- MOTION PICTURE SURVEY OF THE  
MAGNETOSPHERE

NSSDC ID 66-049A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/14/66 TO 07/16/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED DATA ON ONE 400-FT REEL OF 16-MM MOVIE FILM DISPLAYING OBSERVATIONS OF LOW-ENERGY PROTON AND ELECTRON SPECTRA IN THE TERRESTRIAL MAGNETOSPHERE. ABOUT 50 HR OF SUBSTANTIALLY CONTINUOUS SATELLITE OBSERVATIONS ARE COVERED FROM 1331 UT ON JULY 14, 1966, THROUGH 1521 UT ON JULY 16, 1966. EACH MOVIE FRAME CONTAINS A GRAPH OF THE OBSERVED ENERGY SPECTRA (0.3 TO 50 KEV) OF PROTONS AND ELECTRONS FOR A GIVEN TIME AND POINT IN SPACE. A PICTORIAL REPRESENTATION OF THE SATELLITE'S POSITION WITH RESPECT TO THE SUN, THE EARTH, AND ITS MAGNETOSPHERE IS ALSO GIVEN ON EACH FRAME.

EXPERIMENT NAME- TRAPPED RADIATION SCINTILLATION  
COUNTER

NSSDC ID 66-049A-10

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- A. KONRADI, NASA-MSC, HOUSTON, TEXAS  
L.R. DAVIS, NASA-GSFC, GREENBELT, MD.  
R.A. HOFFMAN, NASA-GSFC, GREENBELT, MD.  
J.M. WILLIAMSON, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 01/26/67

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVES OF THIS EXPERIMENT WERE (1) TO STUDY THE TEMPORAL AND SPATIAL VARIATIONS OF THE TRAPPED PARTICLE INTENSITIES, PITCH ANGLE DISTRIBUTIONS, AND ENERGY SPECTRA OF ELECTRONS (10 TO 100 KEV) AND PROTONS (100 TO 1000 KEV) AND (2) TO DETERMINE PARTICLE LIFETIMES, PROCESSES BY WHICH TRAPPED PARTICLES ARE LOST, AND THE SOURCES AND ACCELERATING

MECHANISMS OF TRAPPED PARTICLES. THE EXPERIMENT, LOCATED IN OPEP 2, CONSISTED OF A FILTER WHEEL, WHEEL STEPPING MOTOR, PHOSPHOR SCINTILLATOR, PHOTOMULTIPLIER TUBE, ELECTROMETER, AND COUNT RATE METER. THE DETECTOR HAD TWO ENTRANCE APERTURES FOR PARTICLES, ONE ALIGNED WITH THE PHOTOTUBE AXIS AND ONE AT 90 DEG TO THIS AXIS. BOTH PROTONS AND ELECTRONS COULD ENTER THE ALIGNED OPENING AND REACH THE PHOSPHOR. ONLY ELECTRONS COULD ENTER THE 90-DEG OPENING, SCATTER OFF A GOLD DISC, AND REACH THE PHOSPHOR. THE COUNTING RATE WITH THE ALIGNED OPENING MEASURED PROTON FLUX, AND THE CURRENT MEASURED THE TOTAL ENERGY FLUX OF ELECTRONS, PROTONS, ETC. THE CURRENT WITH THE 90-DEG OPENING MEASURED THE ELECTRON ENERGY FLUX. DIFFERENT THICKNESS ABSORBERS ON THE WHEEL PROVIDED SPECTRAL INFORMATION. THE EXPERIMENT WORKED WELL UNTIL THE ABSORBER WHEEL STOPPED IN JANUARY 1967.

DATA SET NAME- COMPLETE REDUCED AND ANALYZED  
PROTON-ELECTRON DATA ON MAGNETIC TAPE

NSSDC ID 66-049A-10A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/05/66 TO 01/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FOURTEEN 9-TRACK BINARY TAPES WRITTEN ON AN IBM 360/75 COMPUTER WITH ODD PARITY AT 800 BPI. THE TAPES, AS SUPPLIED BY THE EXPERIMENTER, EACH CONTAIN ONE FILE AND DO NOT CONTAIN STANDARD OS/360 TAPE LABELS. THE TAPES CONTAIN A COMPLETE SET OF ION-ELECTRON DETECTOR DATA INCLUDING BOTH THE REDUCED DATA RECORDED AT A 1-KBS RATE AND THE ANALYZED DATA TRANSMITTED AT 8 OR 64 KBS, WHICH, ON THESE TAPES, HAVE BEEN CONDENSED TO AN EQUIVALENT 1-KBS SAMPLING RATE. THE TAPES HAVE FIXED BLOCKED RECORDS 5184 BYTES LONG. EACH BLOCKED RECORD CONTAINS EIGHT LOGICAL RECORDS THAT ARE 648 BYTES LONG. EACH LOGICAL RECORD CONTAINS TIME (UT), THE DETECTOR CURRENTS AND COUNT RATES MEASURED DURING ONE REVOLUTION OF THE ABSORBER WHEEL, A SERIES OF HOUSEKEEPING PARAMETERS, ORBIT AND ATTITUDE PARAMETERS DEFINING THE SATELLITE POSITION IN GEOCENTRIC INERTIAL, GEOMAGNETIC, MAGNETOSPHERIC, AND ECLIPTIC COORDINATES, AND THE DETECTOR ORIENTATION. THE DATA ARE TIME ORDERED, AND DATA OVERLAPS HAVE BEEN REMOVED.

DATA SET NAME- HIGH BIT RATE REDUCED PROTON-ELECTRON  
DATA ON MAGNETIC TAPES

NSSDC ID 66-049A-10B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/05/66 TO 01/16/67

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET CONSISTS OF NINE 7-TRACK BINARY TAPES WRITTEN ON AN IBM 360/75 COMPUTER WITH ODD PARITY AT 800 BPI. THE TAPES, AS SUPPLIED BY THE EXPERIMENTER, CONTAIN ONE FILE EACH AND DO NOT HAVE STANDARD OS/360 TAPE LABELS. THE TAPES CONTAIN THE ION-ELECTRON DETECTOR DATA TRANSMITTED AT THE 8- OR 64-KBS RATES BUT NONE OF THE 1-KBS RATE DATA. THE DATA ARE

WRITTEN ON THE TAPES IN FIXED BLOCKED RECORDS 5664 BYTES LONG. EACH BLOCKED RECORD CONTAINS FOUR LOGICAL RECORDS, EACH 1416 BYTES LONG. EACH LOGICAL RECORD CONTAINS -- TIME (UT), THE DETECTOR CURRENTS AND COUNT RATES MEASURED DURING 1/2 OR 1/16 REVOLUTION OF THE DETECTOR ABSORBER WHEEL, A SERIES OF HOUSEKEEPING PARAMETERS, ORBIT AND ATTITUDE PARAMETERS DEFINING THE SATELLITE POSITION IN GEOCENTRIC, INERTIAL, GEOMAGNETIC, MAGNETOSPHERIC, AND ECLIPTIC COORDINATES, AND THE DETECTOR ORIENTATION. THE DATA ARE TIME ORDERED, AND DATA OVERLAPS HAVE BEEN REMOVED. THE SAME DATA, COMPRESSED TO BE EQUIVALENT TO 1-KBS SAMPLED DATA, ALONG WITH THE DATA RECORDED AT 1 KBS ARE IN DATA SET 66-049A-10A.

EXPERIMENT NAME- RADIO ASTRONOMY

NSSDC ID 66-049A-18

ORIGINAL EXPERIMENT INSTITUTION- U OF MICHIGAN

INVESTIGATORS- F.T. FADDOCK, U OF MICHIGAN , ANN ARBOR, MICH.

DATE LAST USEFUL DATA RECORDED- 12/01/69

EXPERIMENT BRIEF DESCRIPTION

A SWEEP-FREQUENCY RECEIVER MEASURED RADIO NOISE OF FLUX DENSITIES BETWEEN 2.3 TIMES 10 TO THE MINUS 9 AND 1.06 TIMES 10 TO THE -15 W/SQ M/HZ. THE OBSERVED BURSTS WERE ATTRIBUTED TO A SOLAR ORIGIN. FORTY-FIVE DAYS AFTER LAUNCH, A MALFUNCTION OCCURRED IN THE SWEEPING TRIGGER PULSE, INTERMITTENTLY CAUSING THE SWEEP TO CHANGE FROM A 4- TO 2-MHZ SWEEP ONCE EVERY 2 SEC TO A 4- TO 3-MHZ SWEEP EVERY SECOND. BY OCTOBER 10, 1966, THE EXPERIMENT OPERATED IN THE 1-SEC SWEEP MODE (4- TO 3-MHZ) ONLY.

DATA SET NAME- 4- TO 2-MHZ SOLAR BURST LIST ON MICROFILM

NSSDC ID 66-049A-18A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/13/66 TO 09/30/67

DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF TWO TABLES OF RADIO BURSTS OBSERVED IN THE FREQUENCY BAND 4 TO 2 MHZ. THESE LISTS APPEAR AS APPENDIXES TO A THESIS. THEY MAY BE CONSIDERED ANALYZED DATA. THE COVERAGE FROM WHICH THESE LISTS WERE DRAWN WAS ABOUT 91 PERCENT COMPLETE FROM JUNE 1966 THROUGH SEPTEMBER 1967.

DATA SET NAME- 4- TO 2-MHZ RADIO NOISE DATA ON MICROFILM

NSSDC ID 66-049A-18B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/09/66 TO 08/16/68

**DATA SET BRIEF DESCRIPTION**

THESE DATA, CONTAINED ON 65 REELS OF 35-MM MICROFILM, ARE REDUCED DATA THAT WERE RECEIVED FROM THE EXPERIMENTER. THEY ARE IN THE FORM OF FREQUENCY VS TIME SPECTROGRAMS ON WHICH THE SHADE OF GREY INDICATES THE INTENSITY OF THE RECEIVED RADIO NOISE. THE DATA ARE CATALOGED BUT ARE NOT CHRONOLOGICALLY ORDERED. A CATALOG OF THE RADIO NOISE DATA MEASURED BETWEEN JUNE 9, 1966, AND OCTOBER 3, 1967, IS ALSO AVAILABLE (DATA SET 66-049A-18C).

**DATA SET NAME-** DATA SET CATALOG FOR 66-049A-18B CN  
MICROFILM

**NSSDC ID** 66-049A-18C

**AVAILABILITY OF DATA SET-** DATA AT NSSDC READY FOR DISTRIBUTION

**TIME SPAN OF DATA-** 06/09/66 TO 10/03/67

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CATALOG, WHICH IS CONTAINED ON ONE REEL OF 16-MM MICROFILM, CATALOGS A PORTION OF THE DATA IN DATA SET 66-049A-18B. ADDITIONAL EXPERIMENT DOCUMENTATION IS ALSO CONTAINED ON THE MICROFILM.

**EXPERIMENT NAME-** ELECTRON SPECTROMETER

**NSSDC ID** 66-049A-22

**ORIGINAL EXPERIMENT INSTITUTION-** U OF MINNESOTA

**INVESTIGATORS-** J.R. WINCKLER, U OF MINNESOTA, MINNEAPOLIS, MINN.

**DATE LAST USEFUL DATA RECORDED-** 12/01/69

**EXPERIMENT BRIEF DESCRIPTION**

THE FIVE-CHANNEL ELECTRON SPECTROMETER CONSISTED OF AN ANALYZING ELECTROMAGNET, A PLASTIC SCINTILLATOR CRYSTAL, A PHOTOMULTIPLIER TUBE, AND A PULSE HEIGHT ANALYZER. THE ANALYZING ELECTROMAGNET WAS USED TO DEFINE THE FIVE ENERGY CHANNELS. THE PULSE HEIGHT ANALYZER ACCEPTED ONLY THE PULSES CORRESPONDING TO THE PARTICULAR ENERGY CHANNEL BEING SAMPLED. IN THIS WAY, THE BACKGROUND DUE TO BREMSSTRAHLUNG AND PENETRATING PARTICLES WAS REDUCED BECAUSE ONLY THOSE BACKGROUND PULSES IN THE NARROW ENERGY BAND BEING ANALYZED WERE COUNTED. THIS SYSTEM WAS MOUNTED IN A DIRECTION 10 DEG OFF THE SPACECRAFT -Z AXIS WITH A 15-DEG ACCEPTANCE CONE. SINCE OGO 3 WAS SPIN STABILIZED ABOUT ITS Z AXIS SHORTLY AFTER LAUNCH, THE ACCEPTANCE CONE WAS EFFECTIVELY INCREASED TO 35 DEG. DIRECTIONAL MEASUREMENTS OF ELECTRONS WERE MADE IN FIVE CONTIGUOUS, LOGARITHMICALLY EQUAL ENERGY CHANNELS BETWEEN 50 AND 4000 KEV. BACKGROUND PARTICLES WERE COUNTED BY OPERATING THE SPECTROMETER WITHOUT THE ELECTROMAGNET. THE SYSTEM SAMPLED THE FIVE SPECTRAL INTERVALS AND FIVE BACKGROUND INTERVALS EVERY 2.304 SEC WHEN THE OGO 3 SYSTEM WAS OPERATING AT 1 KBS. THE SAMPLING RATE INCREASED LINEARLY WITH THE TELEMETRY BIT RATE. DATA FROM EACH OF THE FIVE CHANNELS WERE TELEMETERED AS ONE DIGITAL WORD. THIS EXPERIMENT PERFORMED WELL FROM LAUNCH TO DECEMBER 1969, WHEN ALL EXPERIMENTS ABOARD OGO 3 WERE TURNED OFF.



DATA SET NAME- PLOTS OF 2-MIN AVERAGED COUNT RATES VS  
TIME (NEAR RADIATION BELTS) ON MICROFILM

NSSDC ID 66-049A-22A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/11/66 TO 04/27/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATE PLOTTED ON A LOGARITHMIC SCALE VS TIME FOR EACH OF THE FIVE CHANNELS. EACH OF THE 267 PLOTS PRESENTED CONTAINS APPROXIMATELY 3 HR OF DATA FOR THAT PORTION OF THE ORBIT IN THE VICINITY OF THE RADIATION BELTS. THESE DATA COVER APPROXIMATELY 50 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 11, 1966, TO APRIL 27, 1968. NO EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- PLOTS OF 15-MIN AVERAGED COUNT RATES VS  
SPACECRAFT RADIAL DISTANCE ON MICROFILM

NSSDC ID 66-049A-22B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/09/66 TO 04/02/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM 655 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE 15-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATES PLOTTED ON A LOGARITHMIC SCALE VS R (IN EARTH RADII) BETWEEN 1 AND 18 FOR EACH OF THE FIVE CHANNELS. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES, THE ORBIT NUMBER, AND AN INDICATION OF WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. THE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 45 PERCENT OF THE ORBITS IN THE PERIOD JUNE 9, 1966, TO APRIL 2, 1968. NO ADDITIONAL EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES ON TAPE

NSSDC ID 66-049A-22C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/09/66 TO 05/03/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF EIGHTEEN 7-TRACK, 556-BPI, IBM 7094, BINARY TAPES GENERATED BY THE EXPERIMENTER. EACH TAPE CONTAINS ONE FILE OF REDUCED DATA. THE FILE IS MADE UP OF AN ARBITRARY NUMBER OF RECORDS AND COVERS AN ARBITRARY PERIOD OF TIME. THE RECORDS ARE OF VARIABLE LENGTH -- 21 TO 1000

48-BIT WORDS. THE FIRST 20 OF THESE WORDS CONSTITUTE A HEADER WHICH INDICATES THE RATE AT WHICH THE DATA WERE TELEMETERED, THE START AND END TIMES OF THE RECORD, AND THE NUMBER OF WORDS IN THE RECORD. THE DATA WORDS ARE GROUPED INTO 40-WORD DATA FRAMES WITHIN WHICH DATA FROM EACH OF THE FIVE SPECTROMETER CHANNELS ARE PRESENTED FOUR TIMES AND BACKGROUND COUNTS FROM EACH CHANNEL ARE PRESENTED THREE TIMES. THE REMAINING FIVE WORDS ARE SYNCHRONIZATION WORDS. THE FIRST SIX BITS OF EACH DATA WORD INDICATE THE CHANNEL AND WHETHER THE DATA ARE ANALYSIS OR BACKGROUND COUNTS. THE NEXT 12 BITS CONTAIN THE DATA IN THE FORM OF ACCUMULATED COUNTS. ONLY NONZERO DATA ARE PRESENTED. THE REMAINING 30 BITS CONTAIN THE STARTING TIME OF THE ACCUMULATION CYCLE. ALL THE RECORDS HAVE BEEN TIME ORDERED ACCORDING TO START TIME OF THE RECORD, SO THAT CONSIDERABLE OVERLAP MAY EXIST IN THE TIME COVERED BY CONSECUTIVE RECORDS.

DATA SET NAME- TABULATIONS OF 5-MIN AVERAGED COUNT  
RATES ON MICROFILM

NSSDC ID 66-049A-22D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/05/66 TO 05/01/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SEVEN REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUPPLIED BY THE EXPERIMENTER. DATA FOR EACH 5-MIN PERIOD FOR EACH OF THE FIVE CHANNELS INCLUDE TOTAL COUNTS, TOTAL BACKGROUND COUNTS, AVERAGE COUNT RATE, AVERAGE BACKGROUND COUNT RATE, AND AVERAGE NET COUNT RATE (AVERAGE COUNT RATE MINUS AVERAGE BACKGROUND COUNT RATE). ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM JUNE 9, 1966, TO MAY 1, 1968.

DATA SET NAME- PLOTS OF 2- AND 5-MIN AVERAGED COUNT  
RATES VS L ON MICROFILM

NSSDC ID 66-049A-22E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/11/66 TO 04/02/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM 555 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE 2- AND 5-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATE PLOTTED ON A LOGARITHMIC SCALE VS L (IN EARTH RADII) FOR EACH OF THE FIVE CHANNELS. THE 2-MIN AVERAGES ARE PRESENTED ONLY FOR THOSE L VALUES THAT ARE LESS THAN 3, WHILE THE 5-MIN AVERAGES ARE PRESENTED ONLY FOR THOSE L VALUES GREATER THAN 3. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES, ORBIT NUMBER, AND WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. THESE DATA, WHICH ARE TIME ORDERED, COVER

APPROXIMATELY 70 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 11, 1966, TO APRIL 2, 1968. NO ADDITIONAL EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- TABULATIONS OF COUNTS VS TIME AT  
DISCRETE L VALUES ON MICROFILM

NSSDC ID 66-049A-22F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/11/66 TO 12/27/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM GENERATED AT NSSDC FROM 65 PAGES OF COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. TIME-ORDERED COUNT RATES, CORRECTED FOR BACKGROUND, FROM EACH OF THE FIVE CHANNELS ARE PRESENTED FOR EACH OF 19 DISCRETE L VALUES IN THE RANGE 1.3 TO 8.0. ALSO PRESENTED ARE THE DATES AND THE EQUATORIAL PITCH ANGLES. THESE DATA COVER APPROXIMATELY 20 PERCENT OF THE PERIOD FROM JUNE 11, 1966, TO DECEMBER 27, 1967.

DATA SET NAME- PLOTS OF 5-MIN AVERAGED COUNT RATES VS  
TIME NEAR PERIGEE ON MICROFILM

NSSDC ID 66-049A-22G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/08/66 TO 05/01/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 5-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATES PLOTTED ON A LOGARITHMIC SCALE VS TIME FOR EACH OF THE FIVE CHANNELS. EACH OF THE 662 PLOTS PRESENTED CONTAINS DATA FROM APPROXIMATELY ONE THIRD OF AN ORBIT, WITH PERIGEE NEAR THE CENTER OF THE PLOT. THESE DATA COVER APPROXIMATELY 50 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 8, 1966, TO MAY 1, 1968. NO EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- COUNT RATES VS EQUATORIAL PITCH ANGLE  
FOR DISCRETE L VALUES ON MICROFILM

NSSDC ID 66-049A-22H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/00/67 TO 12/00/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS PRODUCED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. EACH PAIR OF FRAMES PRESENTS COUNT RATES (ON A LOGARITHMIC SCALE) VS EQUATORIAL PITCH ANGLE (0

TO 90 DEG ON A LINEAR SCALE) FOR EACH OF THE FIVE SPECTROMETER CHANNELS. DATA FROM CHANNELS 1, 3, AND 5 ARE PLOTTED ON ONE FRAME, AND DATA FROM CHANNELS 2 AND 4 ARE PLOTTED ON A SECOND FRAME. EACH FRAME PRESENTS DATA FOR A SPECIFIC L VALUE BETWEEN 1.4 AND 2.4. THE TIME PERIOD COVERED BY EACH FRAME IS EITHER JANUARY TO JUNE 1967 OR JULY TO DECEMBER 1967. THESE COUNT RATES CAN BE REDUCED TO FLUX VALUES BY USING CONVERSION FACTORS SUPPLIED BY THE EXPERIMENTER.

DATA SET NAME- PITCH ANGLE NORMALIZED COUNT RATES VS NSSDC ID 66-049A-22I  
TIME FOR DISCRETE L VALUES ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/00/66 TO 06/00/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS PRODUCED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. EACH PAIR OF FRAMES PRESENTS COUNT RATES (ON A LOGARITHMIC SCALE), WHICH HAVE BEEN NORMALIZED TO AN EQUATORIAL PITCH ANGLE OF 90 DEG, VS TIME FOR EACH OF THE FIVE SPECTROMETER CHANNELS. TICK MARKS ARE PRESENTED ON THE TIME AXIS FOR EACH 5-DAY PERIOD. DATA FROM CHANNELS 1, 3, AND 5 ARE PLOTTED ON ONE FRAME, AND DATA FROM CHANNELS 2 AND 4 ARE PLOTTED ON A SECOND FRAME. EACH FRAME PRESENTS DATA FOR A SPECIFIC L VALUE BETWEEN 1.4 AND 2.4 FOR THE TIME PERIOD DECEMBER 1966 TO JUNE 1967. THESE COUNT RATES CAN BE REDUCED TO FLUX VALUES BY USING CONVERSION FACTORS SUPPLIED BY THE EXPERIMENTER.

DATA SET NAME- COUNT RATES VS TIME FOR DISCRETE L NSSDC ID 66-049A-22J  
VALUES ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/00/66 TO 02/00/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS PRODUCED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. EACH PAIR OF FRAMES PRESENTS COUNT RATES (ON A LOGARITHMIC SCALE), WHICH HAVE BEEN NORMALIZED TO AN EQUATORIAL PITCH ANGLE OF 90 DEG, VS TIME FOR EACH OF THE FIVE SPECTROMETER CHANNELS. THESE DATA HAVE NOT BEEN MADE DIRECTLY COMPARABLE WITH SIMILAR OGO 1 DATA (DATA SET 64-054A-21H). THE EXPERIMENTER HAS PROVIDED CONVERSION FACTORS THAT WILL ACCOMPLISH THIS. DATA FROM CHANNELS 1, 3, AND 5 ARE PLOTTED ON ONE FRAME, AND DATA FROM CHANNELS 2 AND 4 ARE PLOTTED ON A SECOND FRAME. EACH FRAME PRESENTS DATA FOR A SPECIFIC L VALUE BETWEEN 1.3 AND 2.6. THE TIME PERIOD COVERED BY THESE DATA IS JUNE 1966 TO FEBRUARY 1968, WITH EACH HALF-MONTH PERIOD INDICATED BY A TICK MARK. THESE COUNT RATES CAN BE REDUCED TO FLUX VALUES BY USING CONVERSION FACTORS SUPPLIED BY THE EXPERIMENTER.

EXPERIMENT NAME- IONIZATION CHAMBER

NSSDC ID 66-049A-23

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- J.R. WINCKLER, U OF MINNESOTA , MINNEAPOLIS, MINN.

DATE LAST USEFUL DATA RECORDED- 12/01/69

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE IONIZATION DUE TO PRIMARY COSMIC RAYS. THE INSTRUMENTATION CONSISTED OF A 17.78-CM-DIAMETER INTEGRATING IONIZATION CHAMBER WITH A RESETTING DRIFT-TYPE ELECTROMETER. THE SYSTEM WAS MOUNTED ON A 1.2-M BOOM EXTENDING FROM THE MAIN BODY OF THE SPACECRAFT ALONG THE -Y AXIS. THE CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 0.6 AND 12 MEV, RESPECTIVELY, AND TO X RAYS IN THE RANGE 10 TO 50 KEV. THE IONIZATION CURRENT WAS MEASURED BY A VACUUM TUBE ELECTROMETER WHOSE OUTPUT, AS A FUNCTION OF TIME, WAS AN AUTOMATICALLY RESETTING SAWTOOTH RAMP VOLTAGE BETWEEN 0 AND 5 V. DATA WERE TELEMETERED IN THREE INDEPENDENT FORMS THROUGH THREE DIGITAL WORDS AND ONE ANALOG WORD, EACH OF WHICH WAS TELEMETERED ONCE EVERY 1.152 SEC WHEN THE OGO 3 SYSTEM WAS OPERATING AT 1 KBS. THE SAMPLING RATE LINEARLY INCREASED WITH THE TELEMETRY RATE. THIS EXPERIMENT PERFORMED WELL FROM LAUNCH TO DECEMBER 1969, WHEN ALL EXPERIMENTS ABOARD OGO 3 WERE TURNED OFF.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS  
TIME ON MICROFILM

NSSDC ID 66-049A-23A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/08/66 TO 08/11/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE. EACH OF THE 1129 FRAMES CONTAINS DATA FOR UP TO ONE THIRD OF AN ORBIT. APPROXIMATELY 80 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 8, 1966, TO AUGUST 11, 1968, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- ORIGINAL REDUCED PULSE RATES ON TAPE

NSSDC ID 66-049A-23B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/09/66 TO 08/12/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THIRTY-ONE 7-TRACK BINARY TAPES WRITTEN AT 556

BPI ON AN IBM 7094. EACH TAPE, SUBMITTED BY THE EXPERIMENTER, CONTAINS ONE FILE OF REDUCED DATA. THE FILE IS MADE UP OF AN ARBITRARY NUMBER OF RECORDS AND COVERS AN ARBITRARY PERIOD OF TIME. THE RECORDS ARE OF VARIABLE LENGTH RANGING FROM 21 TO 1000 48-BIT WORDS. THE FIRST 20 OF THESE WORDS CONSTITUTE A HEADER THAT INDICATES THE RATE AT WHICH THE DATA WERE TELEMETERED, THE START AND END TIMES OF THE RECORD, THE NUMBER OF WORDS IN THE RECORD, AND WHETHER OR NOT THE RECORD IS IN EXACT TIME ORDER. EACH SUCCESSIVE SET OF THREE WORDS CONTAINS ONE 10-SEC AVERAGED PULSE RATE. THE FIRST WORD IN THE SET CONTAINS THE START TIME OF THE AVERAGE (IN MSEC OF THE DAY). THE SECOND WORD CONTAINS THE ACTUAL DURATION OF THE AVERAGE (WHICH MAY BE SHORTER THAN 10 SEC BECAUSE OF NOISE FILTERING), THE NUMBER OF VOLTAGE RAMPS IN THE AVERAGE, AND WHETHER THE AVERAGE IS BASED ON UNFILTERED RAMPS, FILTERED RAMPS, CLOCK PULSES, OR ANALOG WORDS. THE THIRD WORD GIVES THE AVERAGED PULSE RATE IN NORMALIZED PULSES PER SECOND. ALL THE RECORDS HAVE BEEN ORDERED BY START TIME OF THE RECORD, AND CONSIDERABLE OVERLAP MAY EXIST IN THE TIME COVERED BY CONSECUTIVE RECORDS. THE DATA ON THESE TAPES COVER THE PERIOD FROM JUNE 9, 1966, TO AUGUST 12, 1968.

DATA SET NAME- PLOTS OF PULSE RATES VS L ON MICROFILM

NSSDC ID 66-049A-23C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/11/66 TO 04/02/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM 567 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE VS L (IN EARTH RADII). EACH FRAME PRESENTS 2 HR OF PLAYBACK DATA FOR L VALUES BETWEEN 1 AND 8. ALSO PRESENTED ON EACH PLOT ARE THE BEGINNING AND END TIMES AND AN INDICATION OF WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. APPROXIMATELY 80 PERCENT OF THE ORBITS DURING THE PERIOD JUNE 11, 1966, TO APRIL 2, 1968, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- ATLAS OF 10- TO 50-KEV SOLAR FLARE X  
                  RAYS ON MICROFILM

NSSDC ID 66-049A-23D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/25/66 TO 12/29/67

DATA SET BRIEF DESCRIPTION

AN ION CHAMBER NORMALLY USED FOR PARTICLE MEASUREMENTS ALSO RESPONDED TO BURSTS OF HARD (10 TO 50 KEV) X RAYS THAT OCCURRED DURING SOLAR FLARES. THESE SOLAR X-RAY BURSTS WERE IDENTIFIED AND SEPARATED FROM THE PARTICLE DATA. THESE X-RAY DATA ARE ANALYZED DATA ON ONE REEL OF 35-MM MICROFILM AND ARE COPIES OF RESEARCH REPORTS CONTAINING PLOTS OF THE EXCESS ION CHAMBER RATE VS TIME. DATA FROM OGO 1 (DATA SET 66-054A-20C) ARE ALSO INCLUDED.

DATA SET NAME- PLOTS OF PULSE RATES VS SPACECRAFT  
RADIAL DISTANCE ON MICROFILM

NSSDC ID 66-049A-23E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/09/66 TO 04/02/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM 669 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE VS SPACECRAFT RADIAL DISTANCE R (IN EARTH RADII). EACH PLOT PRESENTS APPROXIMATELY 20 HR OF PLAYBACK DATA FOR R VALUES BETWEEN 1 AND 23. ALSO PRESENTED ON EACH PLOT ARE THE BEGINNING AND END TIMES AND AN INDICATION OF WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. APPROXIMATELY 85 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 9, 1966, TO APRIL 2, 1968, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- TABULATIONS OF HOURLY AVERAGED PULSE  
RATES ON MICROFILM

NSSDC ID 66-049A-23F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/09/66 TO 08/10/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. THE PULSING RATE OF THE ION CHAMBER, IN NORMALIZED PULSES PER SECOND, IS PRESENTED IN FOUR FORMS -- UNFILTERED PULSES, FILTERED PULSES, CLOCK PULSES, AND ANALOG WORD PULSES. EACH OF THE RATES REPRESENTS DATA AVERAGED OVER A PERIOD OF 1 HR. ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, AN INDICATION OF WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THE DATA WERE TELEMETERED. THE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 65 PERCENT OF THE PERIOD FROM JUNE 9, 1966, TO AUGUST 10, 1968.

DATA SET NAME- PLOTS OF LINEAR PULSE RATES VS TIME ON  
MICROFILM

NSSDC ID 66-049A-23G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/09/66 TO 08/11/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC

FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED VS TIME. EACH OF THE 731 PLOTS CONTAINS DATA FROM APPROXIMATELY ONE HALF OF AN ORBIT. APPROXIMATELY 80 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 9, 1966, TO AUGUST 11, 1968, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- TABULATIONS OF 1-MIN AVERAGED PULSE  
RATES ON MICROFILM

NSSDC ID 66-049A-23H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/09/66 TO 08/10/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. THE PULSING RATE OF THE ION CHAMBER, IN NORMALIZED PULSES PER SECOND, IS PRESENTED IN FOUR FORMS -- UNFILTERED PULSES, FILTERED PULSES, CLOCK PULSES, AND ANALOG WORD PULSES. EACH OF THE RATES REPRESENTS DATA AVERAGED OVER A PERIOD OF 1 MIN. ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, AN INDICATION OF WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THESE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM JUNE 9, 1966, TO AUGUST 10, 1968.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS  
TIME NEAR PERIGEE ON MICROFILM

NSSDC ID 66-049A-23J

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/11/66 TO 08/10/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM THAT WERE GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE. EACH OF THE 344 PLOTS CONTAINS DATA FOR A REGION UP TO 2 HR ON EITHER SIDE OF PERIGEE. APPROXIMATELY 75 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 11, 1966, TO AUGUST 10, 1968, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED PULSE RATES VS  
TIME ON MICROFILM

NSSDC ID 66-049A-23K

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/08/66 TO 08/11/68



DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM MICROFILM GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE. EACH OF THE 383 PLOTS CONTAINS DATA FOR UP TO ONE ORBIT (APOGEE TO APOGEE). APPROXIMATELY 80 PERCENT OF THE ORBITS DURING THE PERIOD FROM JUNE 8, 1966, TO AUGUST 11, 1968, ARE REPRESENTED IN THIS DATA SET.

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SPACECRAFT NAME- EXPLORER 33

NSSDC ID 66-058A

OTHER NAMES- IMP-D, AIMP 1, 1966-058A

LAUNCH DATE- 07/01/66

DATE LAST SCIENTIFIC DATA RECORDED- 05/31/71

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

94 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 07/01/66

ORBIT PERIOD- 17000 MIN.

APOGEE-433622. KM ALT

PERIGEE- 30222. KM ALT

INCLINATION-

7 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 33 WAS A SPIN-STABILIZED (SPIN AXIS PARALLEL TO THE ECLIPTIC PLANE, SPIN PERIOD VARYING BETWEEN 2.2 AND 3.6 SEC) SPACECRAFT INSTRUMENTED FOR STUDIES OF INTERPLANETARY PLASMA, ENERGETIC CHARGED PARTICLES (ELECTRONS, PROTONS, AND ALPHAS), MAGNETIC FIELDS, AND SOLAR X RAYS AT LUNAR DISTANCES. THE SPACECRAFT FAILED TO ACHIEVE LUNAR ORBIT BUT DID ACHIEVE MISSION OBJECTIVES. THE INITIAL APOGEE OCCURRED AT ABOUT 1600 HR LOCAL TIME. OVER A 3-YR PERIOD, PERIGEE VARIED BETWEEN 32,200 AND 274,000 KM, APOGEE VARIED BETWEEN 436,000 AND 859,000 KM, AND THE INCLINATION WITH RESPECT TO THE EQUATOR OF THE EARTH VARIED BETWEEN 7 AND 60 DEG. TELEMETRY COVERAGE WAS NEARLY 100 PERCENT COMPLETE.

DATA SET NAME- SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC  
EPHEMERIS PLOTS ON MICROFILM

NSSDC ID 66-058A-000

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/01/66 TO 03/20/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILMED PLOTS OF THE EXPLORER 33 EPHEMERIS IN SOLAR MAGNETOSPHERIC AND SOLAR ECLIPTIC COORDINATES. X-Z AND X-Y PROJECTIONS IN SOLAR MAGNETOSPHERIC COORDINATES ARE AVAILABLE FOR THE TIME PERIODS CORRESPONDING TO JULY 1, 1966, TO FEBRUARY 14, 1967 (ORBITS 1 TO 15), AND MAY 31, 1967, TO SEPTEMBER 8, 1967 (ORBITS 24 TO 29). X-Z AND X-Y PROJECTIONS IN SOLAR ECLIPTIC COORDINATES ARE AVAILABLE FOR THE TIME PERIOD CORRESPONDING TO JULY 1, 1966, TO MARCH

20, 1968 (ORBITS 1 TO 38). ON THE SOLAR ECLIPTIC PROJECTIONS OF ORBITS 1 TO 5, THE MOON'S ORBIT IS PLOTTED. TICK MARKS ARE SHOWN EVERY 3 HR FOR THE SOLAR MAGNETOSPHERIC COORDINATE PROJECTIONS AND EVERY 6 HR FOR THE SOLAR ECLIPTIC PROJECTIONS.

DATA SET NAME- SOLAR ECLIPTIC EPHEMERIS PLOTS

NSSDC ID 66-058A-00E

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 07/01/66 TO 05/01/69

DATA SET BRIEF DESCRIPTION

THE PUBLICATION, 'TRAJECTORIES OF EXPLORERS 33, 34, AND 35, JULY 1966 - APRIL 1969,' NASA-GSFC, X-692-70-64, FEBRUARY 1970, WRITTEN BY K. W. BEHANNON, K. H. SCHATTEN, D. H. FAIRFIELD, AND N. F. NESS, CONTAINS THE TRAJECTORIES OF EXPLORERS 33, 34, AND 35 FROM LAUNCH TO APRIL 1969 (EXCEPT FOR EXPLORER 34 FOR WHICH THERE ARE NO PLCTS AFTER MARCH 1969) AS PROJECTED INTO THE X-Y PLANE IN SOLAR ECLIPTIC COORDINATES. TICK MARKS INDICATING 1-DAY INTERVALS ARE SHOWN FOR EXPLORERS 33 AND 35 AND, WHERE POSSIBLE, FOR EXPLORER 34. THIS PUBLICATION ALSO HAS THE X-Z SOLAR ECLIPTIC ORBIT PROJECTIONS OF THESE SATELLITES FOR JANUARY 1969 TO APRIL 1969. COMPUTED AVERAGE POSITIONS OF THE BOW SHOCK AND MAGNETOPAUSE ARE SHOWN.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS TAPES

NSSDC ID 66-058A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/01/68 TO 02/28/70

DATA SET BRIEF DESCRIPTION

THIS SET OF EPHEMERIS DATA IS CONTAINED ON TWELVE 7-TRACK, 556-BPI, BCD, IBM 360 TAPES. EACH TAPE CONSISTS OF 1 MONTH OF DATA ON ONE FILE. THE DATA RECORDS ON THE TAPES ARE BLOCKED WITH FIVE LOGICAL RECORDS PER PHYSICAL RECORD. EACH LOGICAL RECORD CONTAINING 51 WORDS (204 CHARACTERS). EACH TAPE CONTAINS ONE HEADER RECORD. THIS IS A PHYSICAL RECORD THAT IS BLOCKED THE SAME AS THE DATA RECORDS. THE FOLLOWING INFORMATION IS CONTAINED ON THESE TAPES AT 5-MIN INTERVALS -- TIME, GEOCENTRIC SOLAR ECLIPTIC COORDINATES OF MOON AND SPACECRAFT, SOLAR MAGNETOSPHERIC COORDINATES OF MOON AND SPACECRAFT, SELENOCENTRIC SOLAR ECLIPTIC COORDINATES OF SPACECRAFT, AND GEOMAGNETIC LATITUDE AND LONGITUDE OF SPACECRAFT SUBSATELLITE POINT. EXCEPT FOR JANUARY THROUGH MARCH 1969 AND JANUARY 1970, TAPES COVERING THE TIME PERIOD INDICATED ARE AVAILABLE.

EXPERIMENT NAME- GSFC MAGNETOMETER

NSSDC ID 66-058A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- N.F. NESS, NASA-GSFC, GREENBELT, MD.  
K.W. BEHANNON, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 10/10/68

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A BOCM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER. EACH OF THE THREE SENSORS HAD A RANGE OF MINUS TO PLUS 64 GAMMAS AND A DIGITIZATION RESOLUTION OF MINUS TO PLUS 0.25 GAMMA. ZERO-LEVEL DRIFT WAS CHECKED BY PERIODIC REORIENTATION OF THE SENSORS. SPACECRAFT FIELDS AT THE SENSORS WERE NOT GREATER THAN THE DIGITIZATION UNCERTAINTY. ONE VECTOR MEASUREMENT WAS OBTAINED EACH 5.12 SEC. THE BANDPASS OF THE MAGNETOMETER WAS 0 TO 5 HZ, WITH A 20-DB PER DECADE FALLOFF FOR HIGHER FREQUENCIES. THE DETECTOR FUNCTIONED WELL BETWEEN LAUNCH AND OCTOBER 10, 1968, BUT IT PROVIDED NO USEFUL DATA AFTER THAT DATE.

DATA SET NAME- 5.12-SEC VECTOR MAGNETIC FIELD DATA ON TAPE

NSSDC ID 66-058A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/01/66 TO 10/07/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 59 EXPERIMENTER SUPPLIED 9-TRACK, 800-BPI, 18M 360, BINARY MAGNETIC TAPES. EACH PHYSICAL RECORD CONTAINS FOUR LOGICAL RECORDS OF 1080 BYTES EACH. EACH LOGICAL RECORD CONTAINS DATA TAKEN DURING ONE 81.92-SEC TELEMETRY SEQUENCE. INCLUDED IN EACH LOGICAL RECORD ARE 16 VECTOR MAGNETIC FIELD MEASUREMENTS WITH CARTESIAN COMPONENTS GIVEN IN FOUR COORDINATE SYSTEMS -- A COROTATING SYSTEM ALIGNED ALONG THE MAGNETOMETER SENSOR AXES, A PAYLOAD SYSTEM WITH ITS Z AXIS ALONG THE SPACECRAFT SPIN AXIS AND ITS X AXIS IN THE PLANE DEFINED BY THE SPIN AXIS AND THE SATELLITE-SUN LINE, SOLAR ECLIPTIC COORDINATES, AND SOLAR MAGNETOSPHERIC COORDINATES (Y AND Z COMPONENTS ONLY). FOR THE LATTER THREE COORDINATE SYSTEMS, SEQUENCE AVERAGES AND RMS DEVIATIONS ARE GIVEN FOR THE COMPONENTS. IN ADDITION, 16 FIELD MAGNITUDES AND THE SEQUENCE-AVERAGED MAGNITUDE AND ITS RMS DEVIATIONS ARE GIVEN. THE LATITUDE AND AZIMUTH ANGLES OF THE SEQUENCE-AVERAGED FIELD VECTOR ARE GIVEN IN THE PAYLOAD AND SOLAR ECLIPTIC COORDINATE SYSTEMS. SUPPORTING INFORMATION FOUND IN EACH LOGICAL RECORD INCLUDES TIMES FOR THE 16 FIELD MEASUREMENTS, SPIN PERIOD, SPIN AXIS DIRECTION, AND SPACECRAFT POSITION IN SOLAR ECLIPTIC (X, Y, Z) AND SOLAR MAGNETOSPHERIC (Y, Z ONLY) COORDINATES. THE DATA COVER THE TIME PERIOD JULY 1, 1966, THROUGH OCTOBER 7, 1968, WITH AT LEAST 90 PERCENT COMPLETENESS.

EXPERIMENT NAME- AMES MAGNETIC FIELDS

NSSDC ID 66-058A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

INVESTIGATORS- C.P. SONETT, NASA-ARC , MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- 05/31/71

EXPERIMENT BRIEF DESCRIPTION

THE AMES MAGNETOMETER EXPERIMENT CONSISTED OF A BCM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER AND AN ELECTRONICS PACKAGE. THE SENSORS WERE ORTHOGONALLY MOUNTED, WITH ONE SENSOR ORIENTED ALONG THE SPIN AXIS OF THE SPACECRAFT. A MOTOR INTERCHANGED A SENSOR IN THE SPIN PLANE WITH THE SENSOR ALONG THE SPIN AXIS EVERY 24 HR, ALLOWING INFLIGHT CALIBRATION. THE INSTRUMENT PACKAGE INCLUDED A CIRCUIT FOR SPIN DEMODULATING THE OUTPUTS FROM THE SENSORS IN THE SPIN PLANE. THE NCISE THRESHOLD WAS LESS THAN 0.4 GAMMA. THE INSTRUMENT HAD THREE RANGES COVERING PLUS OR MINUS 20, 60, AND 200 GAMMAS FULL SCALE FOR EACH VECTOR COMPONENT. THE DIGITIZATION ACCURACY WAS 1 PERCENT OF THE ENTIRE RANGE COVERED FOR EACH RANGE. THE MAGNETIC FIELD VECTOR WAS MEASURED INSTANTANEOUSLY, AND THE INSTRUMENT RANGE WAS CHANGED AFTER EACH MEASUREMENT. A PERIOD OF 2.05 SEC ELAPSED BETWEEN ADJACENT MEASUREMENTS AND 6.14 SEC BETWEEN MEASUREMENTS USING THE SAME RANGE. THE INSTRUMENT OPERATED NORMALLY UNTIL THE SATELLITE FAILED.

DATA SET NAME- AVERAGED MAGNETIC FIELD VECTOR PLOTS ON  
MICROFILM

NSSDC ID 66-058A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/01/66 TO 07/04/68

DATA SET BRIEF DESCRIPTION

THESE MAGNETIC FIELD VECTOR PLOTS ARE CONTAINED ON TWO REELS OF 16-MM MICROFILM. THESE REELS CONTAIN PLOTTED 81.8-SEC SCALAR AVERAGES OF THE MAGNITUDE OF B, ITS LATITUDE, AND LONGITUDE IN EITHER SOLAR MAGNETOSPHERIC OR SOLAR EQUATORIAL COORDINATES, ALONG WITH A MEASURE OF THE DEVIATION IN B. GENERALLY, DATA ARE PLOTTED IN SOLAR MAGNETOSPHERIC COORDINATES FOR TIMES WHEN THE SPACECRAFT WAS INSIDE THE MAGNETOSPHERE OR GEOMAGNETIC TAIL AND IN SOLAR EQUATORIAL COORDINATES WHEN THE SPACECRAFT WAS OUTSIDE THESE REGIONS. ABOUT 4 HR OF DATA ARE PLOTTED ON EACH FRAME. SEQUENCE NUMBER, TIME, AND THE COORDINATE SYSTEM USED ARE INDICATED ON EACH PLOT. DRIFTS IN ZERO LEVELS OF THE SENSORS HAVE BEEN CORRECTED BY THE EXPERIMENTER. DATA ARE AVAILABLE OVER THE TIME PERIOD SPECIFIED WITH 95 PERCENT COVERAGE.

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID 66-058A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- K.A. ANDERSON, U OF CALIFORNIA, BERK , BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/20/67

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A 10.2-CM NEHER-TYPE IONIZATION CHAMBER AND TWO LIONEL TYPE 205 HT GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED OMNIDIRECTIONALLY TO ELECTRONS ABOVE 0.7 MEV AND PROTONS ABOVE 12 MEV. BOTH GM TUBES WERE MOUNTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS ABOVE 45 KEV WHICH WERE SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A FULL ANGLE OF 61 DEG AND AXIS OF SYMMETRY WHICH WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. GM TUBE B RESPONDED TO ELECTRONS AND PROTONS ABOVE 22 AND 300 KEV, RESPECTIVELY, IN AN ACCEPTANCE CONE OF 45 DEG FULL ANGLE WITH AXIS OF SYMMETRY PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. BOTH GM TUBES RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS OF ENERGIES ABOVE 2.5 AND 35 MEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER AND COUNTS FROM EACH GM TUBE WERE ACCUMULATED FOR 39.72 SEC AND READ OUT EVERY 40.96 SEC. THE TIME BETWEEN THE FIRST TWO ION CHAMBER PULSES IN AN ACCUMULATION PERIOD WAS ALSO TELEMETERED. ON AUGUST 1, 1967, GM TUBE B BEGAN TO BEHAVE ERRATICALLY, AND ON AUGUST 9, 1967, IT STOPPED COUNTING. GM TUBE A STOPPED COUNTING A FEW DAYS LATER. THE ION CHAMBER OPERATED NORMALLY FROM LAUNCH THROUGH SEPTEMBER 2, 1966. BETWEEN SEPTEMBER 2, 1966, AND OCTOBER 20, 1967, THE DATE OF LAST USABLE DATA, THE ION CHAMBER OPERATED AT A LOWER THRESHOLD VOLTAGE.

DATA SET NAME- ORIGINAL REDUCED ION CHAMBER AND GM  
COUNTS ON TAPE

NSSDC ID 66-058A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/01/66 TO 06/09/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SEVEN 7-TRACK, BCD, 800-BPI MAGNETIC TAPES THAT WERE SUBMITTED BY THE EXPERIMENTER. EACH FILE ON A TAPE HAS A 12-CHARACTER INDEX, WHICH IDENTIFIES THE ORIGINAL GSFC TAPES FROM WHICH THE DATA WERE TAKEN, AND A VARIABLE NUMBER OF 865-CHARACTER DATA RECORDS. EACH DATA RECORD CONTAINS FOUR DATA SEQUENCES. A SEQUENCE CONTAINS THE UT (DAY AND MSEC) OF THE OBSERVATION, TWO ACCUMULATIONS EACH FROM GM TUBES A AND B AND THE ION CHAMBER, THE TIME BETWEEN THE FIRST PAIR OF ION CHAMBER PULSES IN EACH OF TWO ACCUMULATION PERIODS, THE SUN ANGLE, THE SATELLITE SPIN PERIOD, AND A NUMBER OF PROCESSING ERROR FLAGS. THESE DATA, WHICH ARE TIME ORDERED, COVER THE PERIOD JULY 1, 1966, TO JUNE 9, 1967.

EXPERIMENT NAME- ELECTRON AND PROTON DETECTORS

NSSDC ID 66-058A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 05/31/71

EXPERIMENT BRIEF DESCRIPTION

THREE EON TYPE 6213 GEIGER-MUELLER TUBES (GM1, GM2, AND GM3) AND A SILICON SOLID-STATE DETECTOR PROVIDED MEASUREMENTS OF SOLAR X RAYS (GEIGER TUBES ONLY, BETWEEN 2 AND 12 A) AND OF SOLAR, GALACTIC, AND MAGNETOSPHERIC CHARGED PARTICLES. THE GEIGER-MUELLER TUBES MEASURED ELECTRONS OF ENERGIES GREATER THAN 45 TO 50 KEV AND PROTONS OF ENERGIES GREATER THAN 730 TO 830 KEV. THE DETECTOR OUTPUT WAS DISCRIMINATED AT FOUR THRESHOLDS -- (1) PN1, WHICH DETECTED PROTONS BETWEEN .31 AND 10 MEV AND ALPHAS BETWEEN .59 AND 225 MEV, (2) PN2, WHICH DETECTED PROTONS BETWEEN .50 AND 4 MEV AND ALPHAS BETWEEN .78 AND 98 MEV, (3) PN3, WHICH DETECTED PROTONS BETWEEN .82 AND 1.9 MEV AND ALPHAS BETWEEN 1.13 AND 46 MEV, AND (4) PN4, WHICH DETECTED ALPHAS BETWEEN 2.1 AND 17 MEV. GM1 AND THE SILICON DETECTOR WERE ORIENTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS, GM2 WAS ORIENTED PARALLEL TO THE SPIN AXIS, AND GM3 WAS ORIENTED ANTIPARALLEL TO THE SPIN AXIS. DATA FROM GM1 AND PN1 WERE DIVIDED INTO DATA FROM QUADRANTS ORIENTED WITH RESPECT TO THE SUN (SECTORS I, II, III, AND IV WERE CENTERED 180, 270, 0, AND 90 DEG FROM THE SUN, RESPECTIVELY). DATA WERE READ OUT IN EITHER 82- OR 164-SEC INTERVALS. AN INTERMITTENT, RECOGNIZABLE ELECTRONIC FAILURE, RESULTING FROM HIGH TEMPERATURES, OCCURRED IN THE SILICON DETECTOR STARTING ABOUT SEPTEMBER 15, 1966. ACCUMULATOR FAILURES OCCURRED ON JULY 21, 1967, AND SEPTEMBER 24, 1967, BUT THE DATA WERE STILL USABLE. SEE 'OBSERVATIONS OF PROTONS IN THE MAGNETOSPHERE AND MAGNETOTAIL WITH EXPLORER 33,' BY T. P. ARMSTRONG AND S. M. KRIMIGIS, J. GEOPHYS. RES., 73, 143-152, 1968, FOR ADDITIONAL INFORMATION ON THIS EXPERIMENT.

DATA SET NAME- PLOTS OF 2- TO 12-A SOLAR SOFT X-RAY  
FLUX DATA ON MICROFILM

NSSDC ID 66-058A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/02/66 TO 09/26/68

DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF PLOTS ON TWO REELS OF 35-MM MICROFILM OF THE X-RAY FLUX IN THE 2- TO 12-A RANGE. THESE ANALYZED DATA ARE FIRST GENERATION (I.E., AS RECEIVED FROM THE EXPERIMENTER). THE DATA SET IS COMPLETE, AND THE COVERAGE, IF EVERY BREAK IN THE DATA STREAM LARGER THAN 5 MIN IS COUNTED, IS 55 PERCENT. THE PLOTS ARE DESCRIBED BY J. F. DRAKE, J. GIBSON, AND J. A. VAN ALLEN IN 'IOWA CATALOG OF SOLAR X-RAY FLUX,' IN SOLAR PHYSICS, VOL. 10, 433-459, 1969.

DATA SET NAME- 2- TO 12-A SOLAR SOFT X-RAY FLUX DATA ON  
TAPE

NSSDC ID 66-058A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/02/66 TO 09/26/68

DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF TWO REELS OF 7-TRACK, BCD, 556-BPI MAGNETIC TAPE CONTAINING THE X-RAY FLUX IN THE 2- TO 12-A RANGE. THESE ANALYZED DATA WERE RECEIVED FROM THE EXPERIMENTER. THE DATA SET IS COMPLETE, AND THE COVERAGE, IF EVERY BREAK IN THE DATA STREAM LARGER THAN 5 MIN IS COUNTED, IS 55 PERCENT.

DATA SET NAME- SOLAR SOFT X-RAY FLUX LISTINGS ON  
MICROFILM

NSSDC ID 66-058A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/02/66 TO 09/26/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF LISTINGS ON SEVEN REELS OF 35-MM MICROFILM OF THE X-RAY FLUX IN THE 2- TO 12-A RANGE. THE LISTINGS ARE ANALYZED DATA THAT WERE REPROCESSED BY NSSDC. THEY ARE A REFORMATTED PRINTOUT OF DATA SET 66-058A-05B. THE DATA SET IS COMPLETE, AND THE COVERAGE, IF EVERY BREAK IN THE DATA STREAM LARGER THAN 5 MIN IS COUNTED, IS 55 PERCENT. THE LISTINGS ARE DESCRIBED BY J. F. DRAKE, J. GIBSON, AND J. A. VAN ALLEN IN 'IOWA CATALOG OF SOLAR X-RAY FLUX,' IN SOLAR PHYSICS, VOL. 10, 433-459, 1969.

DATA SET NAME- SOLAR SOFT X-RAY BURST DATA ON TAPE

NSSDC ID 66-058A-05D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/03/66 TO 07/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, BCD, 800-BPI REEL OF MAGNETIC TAPE. THE TAPE HAS ONE FILE AND CONTAINS SOLAR X-RAY (2 TO 12 A) FLARE DATA AND PARAMETERS DESCRIBING THEM. INCLUDED ON THE TAPE FOR EACH FLARE ARE -- DATE, START TIME (GMT), TIME(S) OF PEAK(S) (GMT), END TIME (GMT), FLUX INCREASE ABOVE BACKGROUND (AT BURST MAXIMUM), RATIO OF TOTAL FLUX TO BACKGROUND (AT BURST MAXIMUM), INTEGRAL OF THE FLUX INCREASE ABOVE BACKGROUND FOR THE BURST DURATION, FLAGS INDICATING EITHER BREAKS IN THE DATA STREAM OR THE NUMBER OF PEAKS, AND THE RATIO OF THE TIME LOST DUE TO DATA GAPS TO THE TOTAL BURST TIME. THESE ARE ANALYZED DATA FROM THE

EXPERIMENTER AND ARE COMPLETE. FURTHER INFORMATION ON THESE DATA IS AVAILABLE IN 'CHARACTERISTICS OF SOFT SOLAR X-RAY BURSTS,' BY J. F. DRAKE, IN SOLAR PHYSICS, VOL. 16, 152-185, 1971.

DATA SET NAME- LISTING OF SOLAR SOFT X-RAY BURST DATA  
ON MICROFILM

NSSDC ID 66-058A-05E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/03/66 TO 07/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET, A PRINTOUT OF DATA SET 66-058A-05D, CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT CONTAINS A LISTING OF SOLAR X-RAY (2 TO 12 Å) FLARES AND PARAMETERS DESCRIBING THEM. THE LIST INCLUDES, FOR EACH FLARE -- DATE, START TIME (GMT), TIME(S) OF PEAK(S) (GMT), END TIME (GMT), FLUX INCREASE ABOVE BACKGROUND (AT BURST MAXIMUM), RATIO OF TOTAL FLUX TO BACKGROUND FLUX (AT BURST MAXIMUM), INTEGRAL OF THE FLUX INCREASE ABOVE THE BACKGROUND FOR THE BURST DURATION, FLAGS INDICATING EITHER BREAKS IN THE DATA STREAM OR THE NUMBER OF PEAKS, AND THE RATIO OF TIME LOST DUE TO DATA GAPS TO THE TOTAL BURST TIME. THE DATA ARE ANALYZED AND COMPLETE IN TIME COVERAGE. FURTHER INFORMATION ON THESE DATA IS AVAILABLE IN 'CHARACTERISTICS OF SOFT SOLAR X-RAY BURSTS,' BY J. F. DRAKE, IN SOLAR PHYSICS, VOL. 16, 152-185, 1971.

DATA SET NAME- SOLAR SOFT X-RAY DATA COVERAGE ON  
MICROFILM

NSSDC ID 66-058A-05F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/03/66 TO 07/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM CONTAINING GRAPHS THAT INDICATE DATA COVERAGE. EACH GRAPH COVERS A 1-MONTH PERIOD, PLOTTING DAY VS HOUR (IN BLOCKS). DATA GAPS GREATER THAN 5 MIN ARE REPRESENTED BY DARK AREAS. THE PLOTS ARE DESCRIBED BY J. F. DRAKE, J. GIBSON, AND J. A. VAN ALLEN IN 'IOWA CATALOG OF SOLAR X-RAY FLUX,' IN SOLAR PHYSICS, VOL. 10, 433-459, 1965.

DATA SET NAME- PLOTS OF X-RAY AND PARTICLE DATA ON  
MICROFILM

NSSDC ID 66-058A-05G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/01/66 TO 12/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS A SERIES OF PLOTS CONTAINED ON 18 REELS OF 35-MM



MICROFILM. THESE ARE PARTIALLY REDUCED DATA SUBMITTED BY THE EXPERIMENTER. THE DATA COVERAGE IS GREATER THAN 90 PERCENT. SIX PLOTS ARE GIVEN FOR EACH 12-HR PERIOD (0000 TO 1200 OR 1200 TO 2400 UT). THESE PLOTS CONTAIN, AS A FUNCTION OF TIME, (1) THE COUNT RATES OF GM1 FOR EACH SECTOR, (2) THE COUNT RATES OF PN1 FOR EACH SECTOR, (3) THE COUNT RATES OF GM2, GM3, PN2, AND GM1 (GM1 SUMMED OVER ALL SECTORS), (4) THE COUNT RATES OF ALL CHANNELS OF THE SILICON DETECTOR (PN1 SUMMED OVER ALL SECTORS), (5) THE AVERAGE COUNTING RATE (G1AV) OF GM1, SECTORS I, II, AND IV, AND THE COUNTING RATE OF GM1, SECTOR III, DUE TO SOLAR X RAYS (G1X), AND (6) THE ANGULAR DISTRIBUTION DATA IN THE FORM OF THE RATIO OF THE COUNTING RATES OF GM2 TO GM3 AND THE COEFFICIENTS C AND D AS COMPUTED FROM A DISTRIBUTION OF THE FORM  $1 + C \cos(\phi + D)$ , WHERE  $\phi$  IS THE ROTATION ANGLE OF THE SPACECRAFT, FOR PN1 AND GM1.

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SPACECRAFT NAME- GEMINI 10  
OTHER NAMES- 1566-066A

NSSDC ID 66-066A

LAUNCH DATE- 07/18/66

DATE LAST SCIENTIFIC DATA RECORDED- 07/21/66

AGENCY- NASA-OMSF

SPACECRAFT WEIGHT IN ORBIT-

3750 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 07/20/66 ORBIT PERIOD- 92.31 MIN.

APOGEE- 400. KM ALT

PERIGEE- 391. KM ALT

INCLINATION- 28.9 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

GEMINI 10 WAS THE EIGHTH MANNED EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE CONICAL VEHICLE CONSISTED OF A REENTRY MODULE AND AN ADAPTER MODULE. ITS PRIMARY PURPOSE WAS TO CONDUCT RENDEZVOUS AND DOCKING TESTS WITH THE AGENA TARGET VEHICLE. THE MISSION PLAN INCLUDED A RENDEZVOUS WITH THE GEMINI 8 AGENA TARGET, TWO EVA EXCURSIONS, AND THE PERFORMANCE OF 15 SCIENTIFIC, TECHNOLOGICAL, AND MEDICAL EXPERIMENTS. THE SCIENTIFIC EXPERIMENTS WERE RELATED TO (1) ZODIACAL LIGHT, SYNOPTIC TERRAIN, AND SYNOPTIC WEATHER PHOTOGRAPHY, (2) MICROMETEORITE COLLECTIONS, (3) UV ASTRONOMICAL CAMERA, (4) ION WAKE MEASUREMENTS, (5) AND METEOROID EROSION. ALL EXPERIMENTS OBTAINED DATA EXCEPT FOR THE MICROMETEORITE COLLECTOR. THE FIRST RENDEZVOUS AND DOCKING MANEUVERS WERE SUCCESSFULLY ACCOMPLISHED. HOWEVER, FUEL CONSUMPTION WAS LARGER THAN EXPECTED DUE TO A LARGE OUT-OF-PLANE ERROR. THIS RESULTED IN MISSION REVISION. THE FIRST EVA EXCURSION WAS NORMAL FOR 30 MIN BUT WAS THEN TERMINATED BECAUSE BOTH CREW MEMBERS DEVELOPED EYE IRRITATION. A SECOND RENDEZVOUS AND EVA WERE SUCCESSFUL. THE SPACECRAFT REENTERED THE EARTH'S ATMOSPHERE AFTER 43 ORBITS AND LANDED WITHIN 3 MILES OF THE LANDING TARGET ON JULY 21, 1966.

EXPERIMENT NAME- ZODIACAL LIGHT PHOTOGRAPHY

NSSDC ID 66-066A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- E.P. NEY, U OF MINNESOTA , MINNEAPOLIS, MINN.

DATE LAST USEFUL DATA RECORDED- 07/21/66

EXPERIMENT BRIEF DESCRIPTION

A HAND-HELD CAMERA (F/1) EQUIPPED WITH AUTOMATIC TRIGGERING WAS USED BY GEMINI CREWMEN TO OBTAIN PHOTOGRAPHS OF AIRGLOW, ZODIACAL LIGHT, THE MILKY WAY, AND STAR FIELDS. THE CAMERA, WHICH WAS SPECIALLY CONSTRUCTED FOR THE EXPERIMENT, HAD A 50-DEG BY 130-DEG FIELD OF VIEW. A TRANSISTORIZED TIMER WAS PROGRAMMED TO TAKE 30-SEC EXPOSURES, WITH THE SHUTTER CLOSED FOR 10 SEC BETWEEN FRAMES TO ALLOW FOR SPACECRAFT REORIENTATION.

DATA SET NAME- ZODIACAL LIGHT PHOTOGRAPHY ON 35-MM FILM NSSDC ID 66-066A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/18/66 TO 07/21/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM TRI-X NEGATIVES OF THE 20 EXPOSURES MADE ON GEMINI 10 AND IS AVAILABLE ON ONE REEL OF FILM TOGETHER WITH ZODIACAL LIGHT PHOTOGRAPHY FROM GEMINIS 5 AND 9. PICTURE QUALITY IS POORER THAN FOR THE PREVIOUS MISSIONS BECAUSE THE SPACECRAFT WINDOWS WERE DIRTY, AND THE FILM WAS ONLY HALF AS SENSITIVE AS THAT USED ON THE EARLIER FLIGHTS. FOR FRAME NUMBERS AND A BRIEF INDEX TO THE PHOTOGRAPHS, SEE NSSDC 70-08, 'DESCRIPTIVE INDEX TO GEMINI ZODIACAL LIGHT PHOTOGRAPHY.'

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SPACECRAFT NAME- LUNAR ORBITER 1

NSSDC ID 66-073A

OTHER NAMES- LUNAR ORBITER-A, 1966-073A, ORBITER I

LAUNCH DATE- 08/10/66 DATE LAST SCIENTIFIC DATA RECORDED- 10/29/66

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT- 387 KG

ORBIT TYPE- SELENOCENTRIC EPOCH- 08/21/66 ORBIT PERIOD- 219 MIN.

APOGEE- 3588 KM RAD PERIGEE- 1784 KM RAD INCLINATION- 12 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE LUNAR ORBITER 1 SPACECRAFT WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENOGRAPHIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISELUNAR TRAJECTORY AND INJECTED INTO AN ELLIPTICAL LUNAR ORBIT FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION

DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM AUGUST 18 TO 29, 1966, AND READOUT OCCURRED THROUGH SEPTEMBER 14, 1966. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS USED FOR TRACKING PURPOSES UNTIL IT IMPACTED THE LUNAR SURFACE ON COMMAND AT 7 DEG N LATITUDE, 161 DEG E LONGITUDE (SELENOGRAPHIC COORDINATES) ON OCTOBER 29, 1966.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES

NSSDC ID 66-073A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- L.J. KOSOFKY, NASA HEADQUARTERS , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 08/29/66

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS COULD BE OBTAINED. AT AN ALTITUDE OF 46 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON A 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. AT APOLUNE, WHICH OCCURRED ON THE FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS INMEDIATELY PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEPT 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 211 SIMULTANEOUS EXPOSURES OBTAINED, 206 MR PHOTOS AND 13 HR PHOTOS WERE CONSIDERED USABLE. A SHUTTER MALFUNCTION PREVENTED NORMAL EXPOSURE OF MOST OF THE HR IMAGERY. EIGHT EACH OF THE USABLE MR AND HR PHOTOS ARE OF THE LUNAR FAR SIDE, AND TWO OF THESE INCLUDE THE EARTH'S IMAGE. EXCEPT FOR THE SHUTTER MALFUNCTION, EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON SEPTEMBER 14, 1966. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- KODAK AUTOMATICALLY REASSEMBLED SUBFRAMES NSSDC ID 66-073A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/18/66 TO 08/29/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS A COMPLETE SET OF LUNAR ORBITER 1 LUNAR SURFACE PHOTOGRAPHY IN THE FORM OF SECOND GENERATION POSITIVE SUBFRAMES ON 9.5-IN. ROLL FILM. THE SUBFRAMES WERE PRODUCED BY EASTMAN KODAK CO. FROM DUPLICATE NEGATIVES OF THE ZERO GENERATION STATION FRAMELETS USING AN AUTOMATIC REASSEMBLY PRINTER. EACH SUBFRAME MEASURES 9.5 BY 18 IN. AND CONTAINS A 9-BY 14-IN. IMAGE AND A DATA BLOCK. THE DATA BLOCK INCLUDES THE SPACECRAFT EXPOSURE NUMBER, THE READOUT SEQUENCE, THE EXPOSURE TIME, AND REASSEMBLY IDENTIFICATION. EACH IMAGE IS COMPOSED OF 14 FRAMELETS, TWO OF WHICH OVERLAP THE NEXT ADJACENT SUBFRAME. THREE SUBFRAME IMAGES ARE REQUIRED FOR A COMPLETE MR PHOTO AND EIGHT FOR A COMPLETE HR PHOTO.

DATA SET NAME- BOEING HAND-REASSEMBLED FRAMES

NSSDC ID 66-073A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/18/66 TO 08/29/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 93 THIRD GENERATION 16- BY 20-IN. NEGATIVE FILM SHEETS OF LUNAR ORBITER 1 PHOTOGRAPHY. THESE NEGATIVES WERE PREPARED FROM SELECTED HAND-REASSEMBLED 35-MM PAPER FRAMELETS. THE PHOTOGRAPHS WERE ENHANCED TO MINIMIZE JOINTS BETWEEN ADJACENT FRAMELETS AND TO REDUCE THE SYSTEMATIC VARIATIONS IN LIGHT INTENSITY CAUSED BY GROUND RECONSTRUCTION EQUIPMENT (GRE). THEY WERE NOT RETOUCHE. THE OVERALL QUALITY FOR CONTRAST, DENSITY, AND RESOLUTION IS DEGRADED IN COMPARISON TO DATA SETS 66-073A-01A AND -01C.

DATA SET NAME- LARC HAND-ASSEMBLED REGENERATED FRAMES

NSSDC ID 66-073A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/18/66 TO 08/29/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH IS A COMPLETE SET OF USABLE LUNAR ORBITER 1 PHOTOGRAPHY, CONSISTS OF 248 FIRST GENERATION NEGATIVE 20- BY 24-IN. FILM SHEETS. NASA'S LANGLEY RESEARCH CENTER PREPARED THESE ENHANCED PHOTOGRAPHS

FROM ORIGINAL STATION VIDEO TAPES BY ELECTRONICALLY PREPROCESSING THE VIDEO SIGNAL PRIOR TO INPUT TO THE GROUND RECONSTRUCTION EQUIPMENT (GRE). TWO ENHANCEMENT PROCEDURES WERE USED. ONE PROCEDURE INVOLVED VARYING THE PARAMETERS OF GAIN FUNCTION, SIGNAL GAIN, AND SIGNAL OFFSET TO OPTIMIZE DETAIL AND CONTRAST IN THE PHOTOGRAPHIC DATA. THE OTHER INVOLVED THE USE OF AN ELECTRONIC MASK TO REDUCE THE UNDESIRABLE DENSITY GRADIENTS ACROSS THE SCAN AND FRAMELET. BOTH PROCEDURES REQUIRED POINT-BY-POINT EXPOSURE ADJUSTMENTS. THE ENHANCED PHOTOGRAPHS GENERATED FROM THE GRE WERE 35-MM POSITIVE TRANSPARENCIES. THE POSITIVES WERE ASSEMBLED INTO A 20- BY 24-IN. FORMAT, AND CONTACT NEGATIVES WERE MADE. ONE COMPLETE MEDIUM-RESOLUTION FRAME IS CONTAINED ON ONE SHEET WHEREAS THREE SHEETS ARE REQUIRED FOR ONE HIGH-RESOLUTION FRAME. THE PHOTOGRAPHS WERE CONTROLLED FOR SURFACE DETAIL AND ARE NOT RECOMMENDED FOR PHOTOMETRIC STUDIES.

DATA SET NAME- 35-MM MICROFILM FRAME COMPOSITE

NSSDC ID 66-073A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/18/66 TO 08/29/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 1 PHOTOGRAPHY ON ONE REEL OF 35-MM POSITIVE MICROFILM. IT WAS PREPARED AT NSSDC BY MICROFILMING THE BEST PRINT AVAILABLE FROM EITHER DATA SET -01A OR 01B. THE QUALITY OF THE FILM IS SUITABLE FOR STUDIES REQUIRING MINIMUM PRECISION, BUT THIS DATA SET IS INTENDED PRIMARILY FOR SELECTING PHOTOGRAPHS FOR WHICH HIGH QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- LARC FIRST GENERATION 35-MM FRAMELETS

NSSDC ID 66-073A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/18/66 TO 08/29/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 112 ROLLS, EACH AVERAGING APPROXIMATELY 350 FT, OF FIRST GENERATION NEGATIVE 35-MM FILM. THESE ROLLS CONTAIN THE INDIVIDUAL FRAMELETS FOR EACH LUNAR ORBITER 1 PHOTOGRAPH. THIS COMPLETE SET WAS PRODUCED BY THE LANGLEY RESEARCH CENTER FROM THE ORIGINAL (ZERO GENERATION) POSITIVES RECORDED BY THE GROUND RECONSTRUCTION EQUIPMENT (GRE) AT THE GROUND RECEIVING STATIONS. THESE FRAMELETS ARE USEFUL FOR DETAILED ANALYSIS OF LUNAR SURFACE FEATURES.

DATA SET NAME- REVISED PHOTOGRAPHIC SUPPORT DATA ON  
MAGNETIC TAPE

NSSDC ID 66-073A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/18/66 TO 08/29/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE SUPPORT DATA NECESSARY FOR ANALYSIS OF THE LUNAR ORBITER 1 PHOTOGRAPHS. THE PARAMETERS FOR EACH PHOTOGRAPH INCLUDE (1) SPACECRAFT LOCATION AND DISTANCE, (2) CAMERA POINTING ANGLES, (3) PHOTO LOCATION AND TIME, AND (4) APPROPRIATE SOLAR AZIMUTHS. THIS VERSION WAS COMPILED BY THE BOEING CO. AND WAS GENERATED IN JANUARY 1970. THESE ARE THE MOST ACCURATE PHOTO SUPPORT DATA AVAILABLE. THE DATA ARE CONTAINED ON ONE TIME-ORDERED, 7-TRACK, 556-BPI, BINARY TAPE THAT WAS PROCESSED ON A UNIVAC 1108 COMPUTER. A DUPLICATE TAPE, PROCESSED ON AN IBM 7094 COMPUTER, IS ALSO HELD BY NSSDC.

EXPERIMENT NAME- SELENODESY

NSSDC ID 66-073A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- W.H. MICHAEL, JR., NASA-LARC , HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 10/28/66

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT INCLUDED A POWER SOURCE, AN OMNIDIRECTIONAL ANTENNA, AND A TRANSCODER TO OBTAIN INFORMATION FOR DETERMINING THE GRAVITATIONAL FIELD AND PHYSICAL PROPERTIES OF THE MOON. HIGH-FREQUENCY RADIO SIGNALS WERE RECEIVED BY THE SPACECRAFT FROM EARTH TRACKING STATIONS AND RETRANSMITTED TO THE STATIONS TO PROVIDE DOPPLER FREQUENCY MEASUREMENTS (RANGE RATE) AND SIGNAL PROPAGATION TIMES (RANGE). THE TELEMETRY DATA WERE PROCESSED IN REAL TIME ON AN IBM 7044 COMPUTER IN CONJUNCTION WITH AN IBM 7094 COMPUTER. THEY WERE THEN DISPLAYED ON 100-WPM TELETYPE MACHINES, X-Y PLOTTERS, AND BULK PRINTERS FOR ANALYSIS. DATA COVERAGE WAS CONTINUOUS WHILE THE SPACECRAFT WAS VISIBLE FROM THE EARTH. INFORMATION WAS ACQUIRED DURING THE CISLUNAR, THE FIRST, SECOND, AND THIRD ELLIPSE, AND THE EXTENDED MISSION (FROM END OF THE PHOTOGRAPHIC MISSION TO LUNAR IMPACT) PHASES OF THE MISSION. DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA WERE ACCUMULATED DURING TRACKING. THE QUALITY OF RECORDED DATA RANGED FROM GOOD TO EXCELLENT.

DATA SET NAME- RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 66-073A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/10/66 TO 10/28/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TDP) PROGRAM. THIS MASTER FILE IS CONTAINED ON FIVE BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- MODIFIED DATA (ODP) ON MAGNETIC TAPE

NSSDC ID 66-073A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/10/66 TO 10/28/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THE DATA ARE CONTAINED ON SEVEN BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 66-073A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/10/66 TO 10/28/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TCP) PROGRAM. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE FIVE TAPES OF DATA SET -02A ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED BY AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED MODIFIED DATA (ODP) ON MAGNETIC  
TAPE

NSSDC ID 66-073A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/10/66 TO 10/28/66

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE SEVEN TAPES OF DATA SET -02B ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

**EXPERIMENT NAME-** MICROMETEOROID DETECTORS

**NSSDC ID** 66-073A-03

**ORIGINAL EXPERIMENT INSTITUTION-** NASA-LARC

**INVESTIGATORS-** C.A. GURTLE, NASA-LARC , HAMPTON, VA.

**DATE LAST USEFUL DATA RECORDED-** 09/14/66

**EXPERIMENT BRIEF DESCRIPTION**

THE LUNAR ORBITER 1 SPACECRAFT CARRIED 20 MICROMETEOROID DETECTORS, LOCATED ON THE TANK DECK PERIPHERY, FOR THE DETECTION OF MICROMETEORIDS IN THE LUNAR ENVIRONMENT. THESE HALF-CYLINDER-SHAPED DETECTORS WERE PRESSURIZED WITH HELIUM GAS. A RUPTURE OF THE SHELL BY A MICROMETEOROID RELEASED THE GAS PRESSURE, THUS ACTIVATING A MICROSWITCH THAT PROVIDED THE INPUT SIGNAL TO THE TELEMETRY SYSTEM. THE THICKNESS OF THE DETECTOR WALLS WAS .00127 CM.

**DATA SET NAME-** ANALYZED MICROMETEOROID DETECTOR DATA

**NSSDC ID** 66-073A-03A

**AVAILABILITY OF DATA SET-** DATA IN PUBLISHED REPORT(S)

**TIME SPAN OF DATA-** 08/10/66 TO 09/14/66

**DATA SET BRIEF DESCRIPTION**

TELEMETRY DATA OBTAINED DURING THE FIRST 35 DAYS OF THE MISSION INDICATED THAT ALL OF THE MICROMETEOROID DETECTORS WERE INTACT AT THE END OF THAT PERIOD AND THAT NO HITS HAD BEEN RECORDED. THIS INFORMATION IS GIVEN IN 'LUNAR ORBITER I, PHOTOGRAPHIC MISSION SUMMARY,' BOEING CO., NASA CR-782, APRIL 1967.

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**SPACECRAFT NAME-** PIONEER 7

**NSSDC ID** 66-075A

**OTHER NAMES-** PIONEER-8, 1966-075A

**LAUNCH DATE-** 08/17/66

**DATE LAST SCIENTIFIC DATA RECORDED-** STILL OPERATIONAL



AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

63.4 KG

ORBIT TYPE- HELIOCENTRIC  
APOGEE-1.1250 AU RAD

EPOCH- 08/17/66  
PERIGEE-1.0100 AU RAD

ORBIT PERIOD- 402.9 DAYS  
INCLINATION- .09767 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

PIONEER 7 WAS THE SECOND IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, AND THE INTERPLANETARY MAGNETIC FIELD. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED APPROXIMATELY TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED FOR THE TWO HIGHEST BIT RATES. ANOTHER WAS USED FOR THE THREE LOWEST BIT RATES. THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE (1) REAL TIME, (2) TELEMETRY STORE, (3) DUTY CYCLE STORE, AND (4) MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME PERIOD BETWEEN WHICH SUCCESSIVE FRAMES WERE COLLECTED AND STORED COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. REAL-TIME TRANSMISSION WAS GENERALLY USED WHEN TRACKING STATIONS WERE AVAILABLE. OTHERWISE, THE DUTY CYCLE STORE MODE WAS USED. DUE TO THE INCLINATION OF THE TRAJECTORY PLANE WITH THE ECLIPTIC PLANE, A SMALL SPIN AXIS BIAS WAS INTENTIONALLY INTRODUCED TO ASSURE THE MOST FAVORABLE EARTH LOOK ANGLE AND SUN LOOK ANGLE HISTORIES OVER THE DURATION OF THE 180-DAY BASIC MISSION. SOMETIME BETWEEN FEBRUARY 9, 1969, AND FEBRUARY 16, 1969, THE SUN SENSOR, WHICH GENERATED THE SPACECRAFT SUN PULSES, FAILED. THE SATELLITE IS STILL OPERATING AND HAS BEEN WORKING CONTINUOUSLY TO DATE (MARCH 31, 1971).

EXPERIMENT NAME- SINGLE AXIS MAGNETOMETER

NSSDC ID 66-075A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- N.F. NESS, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 01/31/69

**EXPERIMENT BRIEF DESCRIPTION**

A SINGLE, BOOM-MOUNTED, UNIAXIAL FLUXGATE MAGNETOMETER, WITH A DYNAMIC RANGE OF PLUS OR MINUS 32 GAMMAS AND PLUS OR MINUS 0.125-GAMMA RESOLUTION, OBTAINED A VECTOR MAGNETIC FIELD MEASUREMENT BY MEANS OF THREE SCALAR MEASUREMENTS TAKEN AT EQUAL TIME INTERVALS DURING EACH SPACECRAFT SPIN PERIOD (APPROXIMATELY 1 SEC). AT TELEMETRY BIT RATES LESS THAN OR EQUAL TO 16 BPS, TIME AVERAGED FIELD DATA WERE RETURNED FROM THE SPACECRAFT. THE DETECTOR PERFORMED WELL UNTIL FEBRUARY 1969, AFTER WHICH NO FURTHER DATA WERE OBTAINED.

DATA SET NAME- VECTOR MAGNETIC FIELD DATA, 30-SEC  
AVERAGES ON TAPE

NSSDC ID 66-075A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/17/66 TO 02/23/67

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF FOUR 7-TRACK, 556-BPI, IBM 7094, BINARY TAPES SUPPLIED BY THE EXPERIMENTER. EACH TAPE CONTAINS ONE FILE, AND EACH PHYSICAL RECORD CONTAINS DATA FOR 1 HR. THIRTY-SEC AVERAGES OF THE VECTOR MAGNETIC FIELD COMPONENTS ARE GIVEN IN SOLAR ECLIPTIC COORDINATES. THE NUMBER OF POINTS IN EACH AVERAGE (UP TO 30) AND THE STANDARD DEVIATION ARE GIVEN. TIMES OF THE AVERAGES AND OTHER SUPPORTING INFORMATION ARE ALSO GIVEN. THERE IS NO SPACECRAFT EPHEMERIS INFORMATION. DATA FOR ADDITIONAL TIME PERIODS WILL BE ADDED TO THIS DATA SET AS THEY BECOME AVAILABLE.

EXPERIMENT NAME- SOLAR WIND PLASMA FARADAY CUP

NSSDC ID 66-075A-02

ORIGINAL EXPERIMENT INSTITUTION- MIT

INVESTIGATORS- H.S. BRIDGE, MIT, CAMBRIDGE, MASS.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

**EXPERIMENT BRIEF DESCRIPTION**

A MULTIGRID FARADAY CUP WITH TWO SEMICIRCULAR, COPLANAR COLLECTORS WAS USED TO STUDY SOLAR WIND IONS AND ELECTRONS. THE INSTRUMENT HAD 14 CONTIGUOUS ENERGY PER CHARGE CHANNELS BETWEEN 75 AND 9485 V FOR POSITIVE IONS AND FOUR ENERGY PER CHARGE CHANNELS BETWEEN 115 AND 1600 V FOR ELECTRONS. THE INSTRUMENT VIEW AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND PARALLEL TO THE ECLIPTIC PLANE. THE LINE SEPARATING THE TWO COLLECTORS LAY IN THE ECLIPTIC PLANE, ENABLING A ROUGH DETERMINATION OF SOLAR WIND BULK FLOW PERPENDICULAR TO THE ECLIPTIC PLANE. DURING EVERY SECOND SPACECRAFT ROTATION AND AT ONE VOLTAGE LEVEL, THE SUM OF THE CURRENTS FROM THE COLLECTORS WAS OBTAINED IN 28 CONTIGUOUS 11.25-DEG ANGULAR SECTORS (FROM -45 DEG TO 270 DEG, WITH 0 DEG BEING THE SPACECRAFT-SUN LINE). THE EIGHT MEASUREMENTS ABOUT THE SUN-EARTH LINE (-45 DEG TO +45 DEG) WERE TELEMETERED, BUT ONLY THE LARGEST MEASUREMENT IN EACH SUCCEEDING 45-DEG

INTERVAL (45 DEG TO 270 DEG) WAS TELEMETERED. IN ADDITION, DURING THIS ROTATION THE CURRENT FROM ONE OF THE COLLECTORS WAS MEASURED IN ALL TWENTY-EIGHT 11.25-DEG SECTORS, AND THE LARGEST WAS IDENTIFIED AND TELEMETERED (BOTH MAGNITUDE AND SECTOR). A COMPLETE SET OF POSITIVE ION MEASUREMENTS AND ONE ELECTRON MEASUREMENT WERE COMPLETED EVERY 32 SEC. THE TIME BETWEEN EACH 32-SEC GROUP OF MEASUREMENTS VARIED WITH THE BIT RATE. THE EXPERIMENT WORKED WELL FROM LAUNCH TO THE PRESENT (JUNE 1971). FOR MORE COMPLETE INFORMATION, SEE J. GEOPHYS. RES., 71, 3787-3791, AUGUST 1966.

DATA SET NAME- PLOTS OF HOURLY AVERAGED SOLAR WIND  
PLASMA PARAMETERS ON MICROFILM

NSSDC ID 66-075A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/18/66 TO 12/02/68

#### DATA SET BRIEF DESCRIPTION

THESE FIRST GENERATION ANALYZED DATA CONSIST OF TIME-ORDERED PLOTS OF 1-HR AVERAGES OF SOLAR WIND POSITIVE ION BULK SPEED (KM/SEC), DENSITY (NO./CUBIC CM), AND TEMPERATURE (IN 10,000 DEG K). INDIVIDUAL PLOTS CONTINUE FOR ONE SOLAR ROTATION (27 DAYS) AND ARE AVAILABLE ON ONE REEL OF 35-MM MICROFILM. DATA PLOTS FROM THE MIT EXPERIMENT ON PIONEER 6 (DATA SET 65-105A-02A) APPEAR ON THIS SAME REEL OF MICROFILM. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION (IN THE FRAME OF REFERENCE MOVING WITH THE BULK VELOCITY OF THE SOLAR WIND). DATA ARE AVAILABLE FROM AUGUST 18, 1966, TO OCTOBER 1966 WITH A 94 PERCENT COVERAGE, FROM OCTOBER 1966 TO FEBRUARY 1967 WITH A 50 PERCENT COVERAGE, AND FROM FEBRUARY 1967 TO DECEMBER 2, 1968, WITH A 30 PERCENT COVERAGE.

EXPERIMENT NAME- PLASMA PROBE (AMES RESEARCH CENTER)

NSSDC ID 66-075A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

INVESTIGATORS- J.H. WOLFE, NASA-ARC, MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

A QUADRISPHERICAL ELECTROSTATIC ANALYZER WITH EIGHT CONTIGUOUS CURRENT COLLECTORS WAS USED TO STUDY THE DIRECTIONAL INTENSITY OF THE ELECTRONS AND POSITIVE IONS IN THE SOLAR WIND. IONS WERE DETECTED IN 16 LOGARITHMICALLY SPACED ENERGY PER UNIT CHARGE ( $E/Q$ ) STEPS FROM 200 TO 10,000 V. THERE WAS AN ELECTRON MODE OF OPERATION IN WHICH ELECTRONS WERE MEASURED IN EIGHT LOGARITHMICALLY SPACED ENERGY PER CHARGE STEPS RANGING FROM 0 TO 500 V. THE EIGHT COLLECTORS MEASURED PARTICLES INCIDENT FROM EIGHT DIFFERENT CONTIGUOUS ANGULAR INTERVALS RELATIVE TO THE SPACECRAFT EQUATORIAL PLANE (SAME AS THE ECLIPTIC PLANE). THERE WERE FOUR 15-DEG INTERVALS, TWO 20-DEG INTERVALS, AND TWO 30-DEG INTERVALS. AS THE SPACECRAFT WAS SPINNING, FLUXES

WERE MEASURED IN 15 AZIMUTHAL ANGULAR SECTORS. EIGHT OF THESE SECTORS WERE 5-5/8 DEG WIDE, WERE CONTIGUOUS, AND BRACKETED THE SOLAR DIRECTION. THE REMAINING SEVEN SECTORS WERE 45 DEG WIDE. THREE DIFFERENT MODES OF DATA COLLECTION WERE USED. AT THE HIGHEST BIT RATE (512 BPS), THE FULL SCAN MODE WAS ALTERNATED WITH THE MAXIMUM FLUX MODE AT EACH E/Q STEP. IN THE FULL SCAN MODE, THE MAXIMUM FLUX OBSERVED IN EACH OF THE 15 AZIMUTHAL SECTORS AS THE SPACECRAFT ROTATED WAS RECORDED FOR A GIVEN SINGLE COLLECTOR AT A GIVEN E/Q STEP. IN THE MAXIMUM FLUX MODE, ALL COLLECTORS FOR THE GIVEN E/Q STEP WERE OBSERVED, AND THE MAXIMUM FLUX OBTAINED WAS REPORTED ALONG WITH THE NUMBER OF THE COLLECTOR THAT OBSERVED IT AND THE AZIMUTHAL DIRECTION OF THE OBSERVATION. THE AZIMUTHAL DIRECTION IN THE MAXIMUM FLUX MODE WAS MEASURED TO THE NEAREST 128TH OF A SPACECRAFT REVOLUTION, NAMELY, 2-13/16 DEG. ALTERNATING FULL SCAN MODE AND MAXIMUM FLUX MODE MEASUREMENTS WERE MADE FOR THE 16 ION E/Q STEPS AND EIGHT ELECTRON E/Q STEPS FOR COLLECTOR NO. 1. AFTER WHICH THE PROCESS WAS REPEATED FOR COLLECTORS NO. 2 THROUGH 8. THUS, IN A FULL CYCLE OF HIGH BIT RATE DATA, FULL SCAN MODE MEASUREMENTS WERE MADE FOR ALL EIGHT COLLECTORS AT 24 (16 ION AND EIGHT ELECTRON) E/Q STEPS. AS WELL AS EIGHT SETS OF MAXIMUM FLUX MODE MEASUREMENTS FOR THE 24 E/Q STEPS. AT THE NEXT HIGHEST BIT RATE (256 BPS), THE SHORT SCAN MODE WAS ALTERNATED WITH THE MAXIMUM FLUX MODE AT EACH E/Q STEP. IN THE SHORT SCAN MODE, ONLY THE EIGHT 5-5/8-DEG-WIDE AZIMUTHAL SECTORS CENTERED ABOUT THE SOLAR DIRECTION WERE COVERED. AT THE LOW BIT RATES (64 BPS, 16 BPS, AND 8 BPS), THE MAXIMUM FLUX MODE ALONE WAS USED. THUS, NO AZIMUTHAL DISTRIBUTIONS WERE MEASURED. THE FULL SCAN MODE AND SHORT SCAN MODE DATA WERE, OF NECESSITY, GATHERED ONLY DURING THE FIRST FEW MONTHS OF THE MISSION BECAUSE AFTER THAT TIME THE SPACECRAFT WAS TOO FAR AWAY FOR SUCCESSFUL TRANSMISSION AT THE HIGH BIT RATES. HENCE, ALL OF THE DATA AFTER THE FIRST FEW MONTHS OF THE MISSION WERE TAKEN IN THE MAXIMUM FLUX MODE ONLY. THE INSTRUMENT HAS WORKED WELL FROM LAUNCH TO PRESENT (MARCH 1971).

DATA SET NAME- PLOTS OF ANALYZED PLASMA PARAMETERS ON  
MICROFILM

NSSDC ID 66-075A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/17/66 TO 11/19/68

#### DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED PLOTS OF THE FOLLOWING SOLAR WIND PARAMETERS -- (1) PROTON NUMBER DENSITY (PROTONS/CUBIC CM), (2) AZIMUTH (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX FOR IONS (DEG), (3) BULK VELOCITY (KM/SEC), (4) POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG), (5) PROTON TEMPERATURE AND HELIUM TEMPERATURE (DEG), (6) HELIUM/HYDROGEN RATIO (NUMBER OF HELIUM IONS/CUBIC CM/NUMBER OF PROTONS/CUBIC CM), (7) ELECTRON TEMPERATURE (DEG K), AND (8) TWO INDICATORS OF THE ANISOTROPY IN THE SOLAR PLASMA ION TEMPERATURE DISTRIBUTION. THE EXPERIMENTER GIVES THE FOLLOWING INDICATORS OF ACCURACY -- (1) BULK VELOCITY, GOOD TO WITHIN 10 PERCENT, (2) DIRECTION, GOOD TO A FEW DEGREES, AND (3) TEMPERATURE AND DENSITY, COULD BE OFF BY AS MUCH AS 200 PERCENT. THE PLOTS ARE AVAILABLE ON TEN REELS OF 16-MM MICROFILM. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER BASED ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION (IN THE FRAME MOVING WITH THE BULK SOLAR WIND VELOCITY). DATA ARE AVAILABLE

FROM AUGUST 17, 1966, TO DECEMBER 1966 WITH A 90 PERCENT COVERAGE, FROM DECEMBER 1966 TO MARCH 1967 WITH A 50 PERCENT COVERAGE, AND FROM MARCH 1967 TO NOVEMBER 19, 1968, WITH A 10 PERCENT COVERAGE.

EXPERIMENT NAME- TWO-FREQUENCY BEACON RECEIVER

NSSDC ID 66-075A-04

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- V.R. ESHLEMAN, STANFORD U, PALO ALTO, CALIF.  
T.A. CROFT, STANFORD U, PALO ALTO, CALIF.

DATE LAST USEFUL DATA RECORDED- 11/29/67

#### EXPERIMENT BRIEF DESCRIPTION

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED FROM A 4.6-M STEERABLE PARABOLIC ANTENNA AT STANFORD UNIVERSITY TO THE TWO-FREQUENCY RADIO RECEIVER ON THE SPACECRAFT. THE HIGH-FREQUENCY SIGNAL SERVED AS A REFERENCE SIGNAL SINCE ITS PROPAGATION TIME WAS NOT APPRECIABLY DELAYED. THE LOW-FREQUENCY SIGNAL WAS DELAYED IN PROPORTION TO THE TOTAL ELECTRON CONTENT IN THE PROPAGATION PATH. ON THE SPACECRAFT, A PHASE LOCKED RECEIVER COUNTED THE BEAT FREQUENCY ZERO CROSSINGS OF THE RECEIVED SIGNALS TO OBTAIN MEASUREMENTS OF PHASE-PATH DIFFERENCES. DIFFERENTIAL DELAY OF THE GROUP VELOCITY WAS ALSO OBSERVED, AND THESE VALUES WERE TELEMETERED TO THE GROUND STATION. FROM CALCULATED TOTAL ELECTRON CONTENT VALUES, THE IONOSPHERIC EFFECT (UP TO A SELECTED ALTITUDE OBTAINED FROM OTHER EXPERIMENTAL TECHNIQUES) WAS SUBTRACTED TO PRODUCE DATA DESCRIBING THE INTERPLANETARY ELECTRON CONTENT OF THE SOLAR WIND AND ITS VARIATIONS. THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH TO NOVEMBER 29, 1967. FOR SIMILAR EXPERIMENTS COVERING OTHER TIME PERIODS, SEE 68-100A-03, 67-123A-03, 65-105A-04, AND 67-060A-02. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN J. GEOPHYS. RES., 71, 3325-3327, 1966, AND IN RADIO SCIENCE, VOL. 6, 55-63, 1971.

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON TAPE

NSSDC ID 66-075A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/18/66 TO 11/29/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE 556-EPI, 7-TRACK, BCD MAGNETIC TAPE

GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE TAPE ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04A), 8 (67-123A-03A), AND 9 (68-100A-03A) AND MARINER 5 (67-060A-02A).

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON MICROFILM

NSSDC ID 66-075A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/18/66 TO 11/29/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED AND PLOTTED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM GENERATED AT NSSDC FROM DATA SUPPLIED BY THE EXPERIMENTER. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04B), 8 (67-123A-04B), AND 9 (68-100A-03B) AND MARINER 5 (67-060A-02B) AND SOLAR WIND ELECTRON DENSITY PLOTS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D).

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON TAPE

NSSDC ID 66-075A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/15/66 TO 10/26/67

DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF HOURLY VALUES OF NORMALIZED ELECTRON NUMBER DENSITY IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES, AND THE TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE THEN NORMALIZED TO 1 AU ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. VALUES RESULTING FROM INTERPOLATION ARE FLAGGED. NO INTERPOLATED VALUES WERE RECORDED WHEN DATA GAPS EXCEEDED 4 DAYS. THIS DATA SET IS ON ONE 800-BPI, 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN ON AN IBM 7094 COMPUTER. AUXILIARY DATA ON THE TAPE INCLUDE UT AND CARRINGTON ROTATION NUMBER. DATA ARE AVAILABLE FOR ABOUT 12 HR PER DAY WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04D), 8 (67-123A-03C), AND 9 (68-100A-03C) AND MARINER 5 (67-060A-02C) ALSO APPEAR ON THIS TAPE.

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON MICROFILM

NSSDC ID 66-075A-04E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/15/66 TO 10/26/67

DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF PLOTS OF ELECTRON DENSITY VS TIME IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT FOR THE SAME TIMES AT A NEARBY LOCATION WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES. THEN THE OBSERVED TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE NORMALIZED TO 1 AU, ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D) AND HOURLY VALUES OF TOTAL ELECTRON CONTENT FROM PIONEERS 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), AND 9 (68-100A-03B) AND MARINER 5 (67-060A-02B). THIS DATA SET IS ALSO AVAILABLE ON TAPE (66-075A-04D).

EXPERIMENT NAME- COSMIC-RAY TELESCOPE

NSSDC ID 66-075A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO , CHICAGO, ILL.  
C.Y. FAN, U OF ARIZONA , TUCSON, ARIZ.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED A CHARGED PARTICLE TELESCOPE COMPOSED OF FOUR SILICON SOLID-STATE DETECTORS TO STUDY THE ANISOTROPY AND FLUCTUATIONS OF SOLAR PROTONS AND ALPHA PARTICLES. THE PROTON ENERGY RANGES SAMPLED WERE 0.6 TO 12.7 MEV, 12.7 TO 73.0 MEV, 73.0 TO 165 MEV, AND E.GT. 165 MEV (CORRESPONDING TO DETECTOR COINCIDENCES D1D2 NOT D4, D1D2 NOT D3 NOT D4, D1D2D3 NOT D4, AND NOT D1D2D3 NOT D4. THE ALPHA PARTICLE ENERGY RANGES SAMPLED WERE 2.5 TO 52 MEV, 52 TO 280 MEV, AND E.GT. 280 MEV (CORRESPONDING TO THE FIRST THREE DETECTOR COINCIDENCES). THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.4 SEC TO ABOUT ONE MEASUREMENT PER 28 SEC DEPENDING ON THE TELEMETRY BIT RATE. THE DETECTOR WAS MOUNTED TO MAKE A 360-DEG SCAN IN THE ECLIPTIC PLANE ABOUT ONCE PER SECOND. THE D3 DETECTOR FAILED MAY 26, 1969. ALL OTHER EXPERIMENT COMPONENTS WERE WORKING NORMALLY AS OF JUNE 1971.

DATA SET NAME- COUNT RATE PLOTS (COUNTS/SEC VS DAY  
NUMBER) AND TRAJECTRY PLOT CN MICROFILM

NSSDC ID 66-075A-06D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/17/66 TO 12/27/69

DATA SET BRIEF DESCRIPTION

THE DATA SET IS CONTAINED ON ONE REEL OF 16-MM MICROFILM WHICH INCLUDES (1) A PLOT OF THE PIONEER 7 TRAJECTORY IN HELIOCENTRIC SOLAR ECLIPTIC COORDINATES COVERING THE TIME INTERVAL FROM DAY 229 OF 1966 (AUGUST 17, 1966) TO DAY 190 OF 1971 (JULY 9, 1971) AND (2) COUNT RATE PLOTS (COUNTS PER SEC VS DAY NUMBER) PRODUCED ON A CALCCMP PLOTTER FOR 27-DAY INTERVALS FOR THE TELESCOPE COINCIDENCE COMBINATIONS WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.6 TO 12.7 MEV, 12.7 TO 73.0 MEV, 73.0 TO 165 MEV, AND E.GT. 165 MEV (D1D2 NOT D4, D1D2 NOT D3 NOT D4, D1D2D3 NOT D4, AND NOT D1D2D3 NOT D4). THE COUNT RATE DATA ARE A COMPOSITE OF REAL-TIME DATA AND DUTY CYCLE STORAGE DATA AND COVER THE TIME INTERVAL FROM AUGUST 17, 1966, TO DECEMBER 27, 1968.

DATA SET NAME- COMSIC-RAY PROTON COUNTING RATES  
PUBLISHED IN 'SOLAR-GEOPHYSICAL DATA'

NSSDC ID 66-075A-06E

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/01/69 TO 04/30/71

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MONTHLY TABULAR LISTINGS OF DIRECTIONAL COUNTING RATES OF PROTONS WITH ENERGIES IN THE INTERVALS 0.6 TO 12.7 MEV, 12.7 TO 165 MEV, AND GREATER THAN 165 MEV. THE RATES ARE TYPICALLY GIVEN ONCE PER DAY. A LETTER FLAG INDICATES WHETHER THE FLUX WAS RISING, STEADY, OR FALLING AT THE TIME FOR WHICH THE DATA ARE PRESENTED. DATA OBTAINED DURING A GIVEN MONTH ARE PUBLISHED IN 'SOLAR GEOPHYSICAL DATA (PROMPT REPORTS)' WITH A 1-MONTH LAG. THE FIRST DATA PUBLISHED WERE FOR THE MONTH OF APRIL 1969, AND PLANS CALL FOR CONTINUED PUBLICATION OF THESE DATA FOR AS LONG AS THE EXPERIMENT REMAINS OPERATIONAL.

EXPERIMENT NAME- SUPERIOR CONJUNCTION FARADAY ROTATION

NSSDC ID 66-075A-08

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- G.S. LEVY, NASA-JPL, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 12/02/68

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED MEASUREMENTS OF THE POLARIZATION OF THE SPACECRAFT



TELEMETRY SIGNAL TO OBTAIN MEASUREMENTS OF THE RELATIVE FARADAY ROTATION  
DUE TO THE INTERPLANETARY MEDIUM AND THE EARTH'S IONOSPHERE.

DATA SET NAME- SUPERIOR CONJUNCTION FARADAY ROTATION.  
DATA ON TAPE

NSSDC ID 66-075A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/26/68 TO 12/02/68

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS REDUCED DATA IN THE FORM OF CARD IMAGES  
(84-CHARACTER RECORDS) ON ONE 7-TRACK, BCD, 556-BPI, SINGLE FILE MAGNETIC  
TAPE. THE DATA ARE LISTINGS OF THE POLARIZATION ANGLE (RELATIVE TO THE  
ECLIPTIC PLANE) AVERAGED IN 200-SEC INTERVALS, THE STANDARD DEVIATION, AND  
THE AVERAGE TIME AND DATE (IN DECIMAL DAYS) OF THE OBSERVATIONS. THE DATA  
ARE COMPLETE. PIONEER 6 DATA SET 65-105A-08A IS ALSO CONTAINED ON THIS  
TAPE.

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SPACECRAFT NAME- LUNAR ORBITER 2

NSSDC ID 66-100A

OTHER NAMES- ORBITER II, ORBITER-B, 1966-100A

LAUNCH DATE- 11/06/66 DATE LAST SCIENTIFIC DATA RECORDED- 10/11/67

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT- 387 KG

ORBIT TYPE- SELENCENTRIC EPOCH- 11/19/66 ORBIT PERIOD- 210 MIN.

APOGEE- 3588 KM RAD PERIGEE- 1780 KM RAD INCLINATION- 12 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE LUNAR ORBITER 2 SPACECRAFT WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH  
AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING  
SITES FOR SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT  
SELENOGRAPHIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE  
SPACECRAFT WAS PLACED IN A CISELUNAR TRAJECTORY AND INJECTED INTO AN  
ELLIPTICAL LUNAR ORBIT (APOLUNE 3588 KM, PERILUNE 1780 KM) FOR DATA  
ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN  
AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL  
SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS  
WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND  
SYSTEM WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE  
SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM NOVEMBER 18 TO 25, 1966, AND  
READOUT OCCURRED THROUGH DECEMBER 7, 1966. ACCURATE DATA WERE ACQUIRED FROM  
ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS USED FOR  
TRACKING PURPOSES UNTIL IT IMPACTED THE LUNAR SURFACE ON COMMAND AT 3.0 DEG  
N LATITUDE, 119.1 DEG E LONGITUDE (SELENOGRAPHIC COORDINATES) ON OCTOBER  
11, 1967.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES

NSSDC ID 66-100A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- L.J. KOSOFKY, NASA HEADQUARTERS , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 11/25/66

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS COULD BE OBTAINED. AT AN ALTITUDE OF 46 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON A 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. RESOLUTIONS WERE 1 AND 8 M, RESPECTIVELY. AT APOLUNE, ON THE MOON'S FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMATEL PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEPED 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 26 FOR A COMPLETE HR IMAGE. OF THE 211 SIMULTANEOUS EXPOSURES, 207 MR AND 202 HR WERE COMPLETELY READ OUT. THE LOSS OF TWO FRAMES WAS DUE TO THE FAILURE OF THE TRAVELING-WAVE-TUBE AMPLIFIER DURING FINAL READOUT OPERATIONS. ALL RECOVERED PHOTOGRAPHY IS CONSIDERED USABLE. EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON DECEMBER 7, 1966. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- AMS FRAMES HAND ASSEMBLED FROM ORIGINAL  
GRE FRAMELETS

NSSDC ID 66-100A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/18/66 TO 11/25/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS ONE COMPLETE SET (823 NEGATIVES) OF THIRD GENERATION 20-

BY 24-IN. FILM SHEETS. THESE SHEETS WERE PREPARED BY THE ARMY MAP SERVICE (AMS) FROM A NEGATIVE COPY OF THE PRIME GRE RECORD MADE BY EASTMAN KODAK CO. A POSITIVE CONTACT PRINT WAS PREPARED, THEN CUT ALONG THE FIDUCIAL LINES TO SEPARATE INDIVIDUAL FRAMELETS. THESE FRAMELETS WERE MOUNTED ON A TRANSPARENT BACKING IN CORRECT SEQUENCE AND ORIENTATION, AND A FILM NEGATIVE WAS MADE BY CONTACT PRINTING. THE ACTUAL IMAGE MEASURES 15.5 BY 20 IN. FRAME IDENTIFICATION APPEARS ON EACH PRINT. ONE MR PHOTO APPEARS ON ONE FILM SHEET WHEREAS THREE FILM SHEET NEGATIVES ARE REQUIRED FOR ONE MR FRAME. THESE PHOTOGRAPHS HAVE LOST PHOTOMETRIC RELATIONSHIPS USEFUL IN SLOPE DETERMINATION BECAUSE OF THE DENSITY CONTROL TECHNIQUE UTILIZED IN PROCESSING. THIS TECHNIQUE ALSO CAUSED BRIGHT AREAS TO PRINT AS A GRAY TONE. HOWEVER, THE CONTROL TECHNIQUE DOES FACILITATE INTERPRETATION OF THE PHOTOGRAPHS.

DATA SET NAME- KODAK AUTOMATICALLY REASSEMBLED SUBFRAMES NSSDC ID 66-100A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/18/66 TO 11/25/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS A COMPLETE SET OF LUNAR ORBITER 2 LUNAR SURFACE PHOTOGRAPHY IN THE FORM OF SECOND GENERATION POSITIVE SUBFRAMES ON 9.5-IN. ROLL FILM. THE SUBFRAMES WERE PRODUCED BY EASTMAN KODAK CO. FROM DUPLICATE NEGATIVES OF THE ZERO GENERATION STATION FRAMELETS USING AN AUTOMATIC REASSEMBLY PRINTER. EACH SUBFRAME MEASURES 9.5 BY 18 IN. AND CONTAINS A 9-BY 14-IN. IMAGE AND A DATA BLOCK. THE DATA BLOCK INCLUDES THE SPACECRAFT EXPOSURE NUMBER, THE READOUT SEQUENCE, THE EXPOSURE TIME, AND REASSEMBLY IDENTIFICATION. EACH IMAGE IS COMPOSED OF 14 FRAMELETS, TWO OF WHICH OVERLAP THE NEXT ADJACENT SUBFRAME. THREE SUBFRAME IMAGES ARE REQUIRED FOR A COMPLETE MR PHOTO AND EIGHT FOR A COMPLETE HR PHOTO.

DATA SET NAME- LARC HAND-ASSEMBLED REGENERATED FRAMES NSSDC ID 66-100A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/18/66 TO 11/25/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH IS A COMPLETE SET OF THE USABLE LUNAR ORBITER 2 PHOTOGRAPHY, CONSISTS OF 823 FIRST GENERATION NEGATIVE 20- BY 24-IN. FILM SHEETS. NASA'S LANGLEY RESEARCH CENTER PREPARED THESE ENHANCED PHOTOGRAPHS FROM ORIGINAL STATION VIDEO TAPES BY ELECTRONICALLY PREPROCESSING THE VIDEO SIGNAL PRIOR TO INPUT TO THE GROUND RECONSTRUCTION EQUIPMENT (GRE). TWO ENHANCEMENT PROCEDURES WERE USED. ONE PROCEDURE INVOLVED VARYING THE PARAMETERS OF GAIN FUNCTION, SIGNAL GAIN, AND SIGNAL OFFSET TO OPTIMIZE DETAIL AND CONTRAST IN THE PHOTOGRAPHIC DATA. THE OTHER INVOLVED THE USE OF AN ELECTRONIC MASK TO REDUCE THE UNDESIRABLE DENSITY GRADIENTS ACROSS THE

SCAN AND FRAMELET. BOTH PROCEDURES REQUIRED POINT-BY-POINT EXPOSURE ADJUSTMENTS. THE ENHANCED PHOTOGRAPHS GENERATED FROM THE GRE WERE 35-MM POSITIVE TRANSPARENCIES. THE POSITIVES WERE ASSEMBLED INTO A 20- BY 24-IN. FORMAT, AND CONTACT NEGATIVES WERE MADE. ONE COMPLETE MEDIUM-RESOLUTION FRAME IS CONTAINED ON ONE SHEET WHEREAS THREE SHEETS ARE REQUIRED FOR ONE HIGH-RESOLUTION FRAME. THE PHOTOGRAPHS WERE CONTROLLED FOR SURFACE DETAIL AND ARE NOT RECOMMENDED FOR PHOTOMETRIC STUDIES.

DATA SET NAME- 35-MM MICROFILM FRAME COMPOSITE

NSSDC ID 66-100A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/18/66 TO 11/25/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 2 PHOTOGRAPHY ON ONE REEL OF 35-MM POSITIVE MICROFILM. IT WAS PREPARED AT NSSDC BY MICROFILMING THE BEST PRINT AVAILABLE FROM EITHER DATA SET -01A OR -01B. THE QUALITY OF THE FILM IS SUITABLE FOR STUDIES REQUIRING MINIMUM PRECISION, BUT THIS DATA SET IS INTENDED PRIMARILY FOR SELECTING PHOTOGRAPHS FOR WHICH HIGH QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- LARC FIRST GENERATION 35-MM FRAMELETS

NSSDC ID 66-100A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/18/66 TO 11/25/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 285 ROLLS, EACH AVERAGING APPROXIMATELY 350 FT. OF FIRST GENERATION NEGATIVE 35-MM FILM. THESE ROLLS CONTAIN THE INDIVIDUAL FRAMELETS FOR EACH LUNAR ORBITER 2 PHOTOGRAPH. THIS COMPLETE SET WAS PRODUCED BY THE LANGLEY RESEARCH CENTER FROM THE ORIGINAL (ZERO GENERATION) POSITIVES RECORDED BY THE GROUND RECONSTRUCTION EQUIPMENT (GRE) AT THE GROUND RECEIVING STATIONS. THESE FRAMELETS ARE USEFUL FOR DETAILED ANALYSIS OF LUNAR SURFACE FEATURES.

DATA SET NAME- REVISED PHOTOGRAPHIC SUPPORT DATA ON  
MAGNETIC TAPE

NSSDC ID 66-100A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/18/66 TO 11/25/66

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE SUPPORT DATA NECESSARY FOR ANALYSIS OF THE LUNAR

ORBITER 2 PHOTOGRAPHS. THE PARAMETERS FOR EACH PHOTOGRAPH INCLUDE (1) SPACECRAFT LOCATION AND DISTANCE, (2) CAMERA POINTING ANGLES, (3) PHOTO LOCATION AND TIME, AND (4) APPROPRIATE SOLAR AZIMUTHS. THIS VERSION WAS COMPILED BY THE BOEING CO. AND WAS GENERATED IN JANUARY 1970. THESE ARE THE MOST ACCURATE PHOTO SUPPORT DATA AVAILABLE. THE DATA ARE CONTAINED ON ONE TIME-ORDERED, 7-TRACK, 556-BPI, BINARY TAPE. THEY WERE PROCESSED ON AN 1108 COMPUTER. A DUPLICATE TAPE, PROCESSED ON A 7094 COMPUTER, IS ALSO HELD BY NSSCC.

EXPERIMENT NAME- SELENODESY

NSSDC ID 66-100A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- W.H. MICHAEL, JR., NASA-LARC , HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 10/11/67

#### EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT INCLUDED A POWER SOURCE, AN OMNIDIRECTIONAL ANTENNA, AND A TRANSPONDER TO OBTAIN INFORMATION FOR DETERMINING THE GRAVITATIONAL FIELD AND PHYSICAL PROPERTIES OF THE MOON. HIGH-FREQUENCY RADIO SIGNALS WERE RECEIVED BY THE SPACECRAFT FROM EARTH TRACKING STATIONS AND RETRANSMITTED TO THE STATIONS TO PROVIDE DOPPLER FREQUENCY MEASUREMENTS (RANGE RATE) AND PROPAGATION TIMES (RANGE). THE TELEMETRY DATA WERE PROCESSED IN REAL TIME ON AN IBM 7044 COMPUTER IN CONJUNCTION WITH AN IBM 7094 COMPUTER. THEY WERE THEN DISPLAYED ON 100-WPM TELETYPE MACHINES, X-Y PLOTTERS, AND BULK PRINTERS FOR ANALYSIS. DATA COVERAGE WAS CONTINUOUS WHILE THE SPACECRAFT WAS VISIBLE FROM EARTH. INFORMATION WAS ACQUIRED DURING THE CISELUNAR, THE FIRST AND SECOND ELLIPSE, AND THE EXTENDED MISSION (FROM END OF THE PHOTOGRAPHIC MISSION TO LUNAR IMPACT) PHASES OF THE MISSION. DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA WERE ACCUMULATED DURING TRACKING. THE QUALITY OF RECORDED DATA RANGED FROM GOOD TO EXCELLENT.

DATA SET NAME- RAW DATA (TOP) ON MAGNETIC TAPE

NSSDC ID 66-100A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/06/66 TO 10/11/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TOP) PROGRAM. THIS MASTER FILE IS CONTAINED ON SEVEN BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- MODIFIED DATA (ODP) ON MAGNETIC TAPE

NSSDC ID 66-100A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/06/66 TO 10/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE CRBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THE DATA ARE CONTAINED ON 10 BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 66-100A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/06/66 TO 10/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TDP) PROGRAM. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE SEVEN TAPES OF DATA SET -02A ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED MODIFIED DATA (ODP) ON MAGNETIC  
TAPE

NSSDC ID 66-100A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/06/66 TO 10/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE CRBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE 10 TAPES OF DATA SET -02B ONTO ONE BINARY, 7-TRACK,

556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

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SPACECRAFT NAME- ATS 1 NSSDC ID 66-110A  
OTHER NAMES- ATS-B, 1966-110A  
LAUNCH DATE- 12/06/66 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL  
AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 352 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 12/10/66 ORBIT PERIOD- 1440. MIN.  
APOGEE- 35784. KM ALT PERIGEE- 35667. KM ALT INCLINATION- 0.5 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE SYNCHRONOUS-ALTITUDE, SPIN-STABILIZED SATELLITE ATS 1 WAS PLACED AT 151.16 DEG W LONGITUDE OVER THE PACIFIC OCEAN IN A GEOSTATIONARY EQUATORIAL ORBIT. THE SPIN PERIOD RANGED BETWEEN .61 AND .75 SEC, WHILE THE SPIN AXIS WAS APPROXIMATELY PARALLEL TO THE GEOMAGNETIC FIELD. THIS COMMUNICATIONS SATELLITE CONTAINED A SMALL ENVIRONMENTAL MEASUREMENT EXPERIMENT (EME) PACKAGE. THE EME INCLUDED A SEPARATE POWER SUPPLY AND ENCODER. THE EME MADE MEASUREMENTS OF ENERGETIC PARTICLES, SUPRATHERMAL ION FLUXES, AND THE AMBIENT MAGNETIC FIELD. THE SATELLITE WAS PUT IN AN OPERATIONAL OFF STATUS ON JULY 1, 1970, AFTER WHICH DATA WERE NOT ROUTINELY GATHERED BY STADAN. HOWEVER, MAGNETIC FIELD AND ENERGETIC PROTON DATA ARE CURRENTLY BEING ROUTINELY GATHERED BY NOAA AT BOULDER IN SUPPORT OF THEIR PROTON MONITOR PROJECT, AND SOME DATA FROM OTHER EXPERIMENTS ARE BEING RECEIVED AS OF JUNE 1971.

EXPERIMENT NAME- OMNIDIRECTIONAL SPECTROMETER NSSDC ID 66-110A-03

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CORP

INVESTIGATORS- G.A. PAULIKAS, AEROSPACE CORP , EL SEGUNDO, CALIF.  
J.B. BLAKE, AEROSPACE CORP , EL SEGUNDO, CALIF.  
S.C. FREDEN, NASA-GSFC , GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE CHARGED PARTICLE EXPERIMENT DESIGNED FOR ATS 1 BY AEROSPACE CORPORATION PERSONNEL CONSISTED OF AN ARRAY OF THREE OMNIDIRECTIONAL DETECTORS. THESE SHIELDED, SOLID-STATE DETECTORS MEASURED ELECTRONS WITH THRESHOLDS OF 0.30, 0.45, 1.05, AND 1.90 MEV AND PROTONS IN THE ENERGY RANGES 5 TO 21 MEV AND 21 TO 70 MEV. AS OF JUNE 1971, DATA WERE STILL BEING RECEIVED FROM THIS EXPERIMENT.

DATA SET NAME- PROTON AND ELECTRON FLUX VALUES ON TAPE

NSSDC ID 66-110A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/17/66 TO 12/05/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FORTY-NINE 7-TRACK, 800-BPI, CDC 6600, BINARY MAGNETIC TAPES COVERING, IN CHRONOLOGICAL ORDER, THE TIME PERIOD DECEMBER 17, 1966, THROUGH DECEMBER 5, 1968. THE TAPES CONTAIN PROTON AND ELECTRON FLUX VALUES THAT WERE DERIVED FROM OBSERVED COUNT RATES. ORBIT INFORMATION IS NOT CONTAINED ON THESE TAPES.

DATA SET NAME- PROTON AND ELECTRON FLUX VALUES ON  
REFORMATTED TAPE

NSSDC ID 66-110A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/17/66 TO 12/05/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TEN 7-TRACK, 800-BPI, IBM 7094, BINARY TAPES THAT CONTAIN THE SAME DATA AS ARE CONTAINED IN DATA SET 66-110A-03A. THE STRUCTURE OF THE INDIVIDUAL LOGICAL RECORDS HAS BEEN REFORMATTED AT NSSDC. THERE ARE 250 FOUR-WORD LOGICAL RECORDS PER PHYSICAL RECORD.

EXPERIMENT NAME- PARTICLE TELESCOPE

NSSDC ID 66-110A-05

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

INVESTIGATORS- W.L. BROWN, BELL TELEPHONE LAB , MURRAY HILL, N.J.  
L.J. LANZEROTTI, BELL TELEPHONE LAB , MURRAY HILL, N.J.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THE EXPERIMENT CONSISTED OF A SIX-ELEMENT SEMICONDUCTOR PARTICLE TELESCOPE MOUNTED BEHIND A COLLIMATOR WITH A HALF ANGLE OF ABOUT 20 DEG. THE SIX ELEMENTS OPERATED IN NINE MODES WITH FIVE ENERGY INTERVALS PER MODE. THE INSTRUMENT COULD DETECT PROTONS FROM 0.6 TO 100 MEV, ALPHA PARTICLES FROM 2.4 TO 400 MEV, AND ELECTRONS FROM 0.4 TO 3 MEV. SPECIES DISCRIMINATION WAS POSSIBLE OVER MOST OF THE ENERGY RANGES. ONE OF THE NINE MODES PROVIDED DATA ON DETECTOR NOISE AND PARTICLE BACKGROUND. ONE EXPERIMENTAL MODE WAS MONITORED DURING ONE TELEMETRY



SEQUENCE. THE COMPLETE EXPERIMENT SEQUENCE READOUT REQUIRED 16 TELEMETRY SEQUENCES AND WAS REPEATED EVERY 5.46 MIN. ONCE EVERY 5.8 HR, THE COUNTERS AND ELECTRONICS WERE CALIBRATED. THE EXPERIMENT HAS FUNCTIONED NORMALLY THROUGHOUT THE OPERATIONAL LIFE OF THE SPACECRAFT.

DATA SET NAME- PLOTS OF REDUCED PARTICLE COUNT RATES ON  
MICROFILM

NSSDC ID 66-110A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/05/66 TO 03/01/67

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, GENERATED AT BELL TELEPHONE LABORATORIES FROM ORIGINAL DATA, CONSIST OF SEVEN REELS OF 35-MM MICROFILM PLOTS. THE PLOTS CONTAIN DATA IN EACH OF NINE EXPERIMENTAL MODES DESIGNATED 'A' THROUGH 'I'. EACH MODE LETTER INDICATES A SPECIFIC LOGICAL PROGRAM FOR THE ONBOARD DATA PROCESSING INVOLVING THE USE OF COINCIDENT AND ANTICOINCIDENT CIRCUITS TO YIELD A PARTICULAR SPECIES PARTICLE COUNT RATE. FOR EACH MODE, THE LOG OF THE COUNT RATE OF EACH TELESCOPE ELEMENT (INVOLVED IN THAT MODE) IS PLOTTED AGAINST TIME. EIGHT HR OF DATA ARE PLOTTED ON EACH GRAPH, AND EACH GRAPH CONTAINS DATA FROM A SINGLE MODE. BECAUSE EACH MODE WAS MONITORED IN TURN FOR 5.12 SEC AND THE EXPERIMENTAL SAMPLING SEQUENCE REQUIRED 2.73 MIN TO BE COMPLETED, THE PLOTS EFFECTIVELY REPRESENT SIMULTANEOUS MEASUREMENTS OF THE COUNT RATES FOR EACH MODE. THE TIME PERIODS COVERED ARE DECEMBER 9, 1966, TO DECEMBER 19, 1966, AND DECEMBER 23, 1966, TO MARCH 1, 1967.

EXPERIMENT NAME- FARADAY ROTATION

NSSDC ID 66-110A-15

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- A.V. DAROSA, STANFORD U , PALO ALTO, CALIF.  
P.C. YUEN, U OF HAWAII , HONOLULU, HAWAII  
T. H. ROELOFS, U OF HAWAII , HONOLULU, HAWAII

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

ATS 1 WAS PLACED INTO A GEOSTATIONARY ORBIT ABOUT 35,800 KM ABOVE THE INTERSECTION OF THE EQUATOR AND 151 DEG W LONGITUDE. THE SATELLITE HAD A 136-MHZ TRANSPONDER THAT WAS ADAPTED TO OPERATE AS A TWO-FREQUENCY BEACON BY ALLOWING THE RADIATION OF A THIRD HARMONIC, 408 MHZ. THE VHF SIGNALS WERE USED TO STUDY TOTAL ELECTRON CONTENT AND ITS VARIATIONS. STATIONS AT HAWAII AND AT STANFORD UNIVERSITY ARE KNOWN TO HAVE MADE ELECTRON CONTENT DETERMINATIONS BY MEASURING THE FARADAY ROTATION OF THE TRANSMITTED VHF SIGNALS. THE COUNT OF ROTATIONS DUE TO PROPAGATION THROUGH THE IONOSPHERE WAS CONVERTED TO TOTAL ELECTRON CONTENT ALONG THE PATH OF SIGNAL

PROPAGATION.

DATA SET NAME- PUBLISHED PLOTS OF ANALYZED TOTAL  
ELECTRON CONTENT DATA

NSSDC ID 66-110A-15A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 01/01/67 TO 12/31/69

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF PLOTS OF ELECTRON CONTENT VS LOCAL TIME (HAWAIIAN STANDARD TIME). THERE IS ONE PLCT FOR EACH 24-HR PERIOD (LOCAL DAY). THE DATA WERE OBTAINED AT HAWAII BY MEASURING THE FARADAY ROTATION OF THE VHF BEACON TRANSMISSIONS FROM THE SATELLITE. THE DATA SET IS CONTAINED IN A UNIVERSITY OF HAWAII REPORT, 'ATLAS OF TOTAL ELECTRON CONTENT PLOTS,' PREPARED BY P. C. YUEN AND T. H. ROELOFS OF THE RADIOSCIENCE LABORATORY, DEPARTMENT OF ELECTRICAL ENGINEERING. THE ENTIRE REPORT CONSISTS OF FIVE VOLUMES. THIS DATA SET IS CONTAINED IN VOLUMES 3, 4, AND 5. SOME ELECTRON CONTENT DATA DERIVED FROM SYNCOM 3 TELEMETRY CARRIER SIGNALS ARE ALSO CONTAINED IN THESE VOLUMES. IF THIS REPORT CANNOT BE OBTAINED FROM THE UNIVERSITY OF HAWAII, THE NATIONAL SPACE SCIENCE DATA CENTER WILL ATTEMPT TO PROVIDE THE DATA.

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SPACECRAFT NAME- LUNAR ORBITER 3  
OTHER NAMES- LUNAR ORBITER-C, 1967-008A, ORBITER III

NSSDC ID 67-008A

LAUNCH DATE- 02/05/67 DATE LAST SCIENTIFIC DATA RECORDED- 10/09/67

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT- 387 KG

ORBIT TYPE- SELENOCENTRIC EPOCH- 02/12/67 ORBIT PERIOD- 210 MIN.  
APOGEE- 3588 KM RAD PERIGEE- 1788 KM RAD INCLINATION- 21 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE LUNAR ORBITER 3 SPACECRAFT WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENODETTIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISELUNAR TRAJECTORY AND INJECTED INTO AN ELLIPTICAL LUNAR ORBIT FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM FEBRUARY 15 TO 23, 1967, AND READOUT OCCURRED THROUGH MARCH 2, 1967. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER

EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS USED FOR TRACKING PURPOSES UNTIL IT IMPACTED THE LUNAR SURFACE ON COMMAND AT 14.3 DEG N LATITUDE, 97.7 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES) ON OCTOBER 9, 1967.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES

NSSDC ID 67-008A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- L.J. KOSOFKY, NASA HEADQUARTERS , WASHINGTON, D.C.  
I.G. RECANT, NASA-LARC , HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 02/23/67

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS COULD BE OBTAINED. AT AN ALTITUDE OF 46 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON A 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. RESOLUTIONS WERE 1 AND 8 M, RESPECTIVELY. AT APOLUNE, ON THE MOON'S FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMATEL PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEPED 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 66 FOR A COMPLETE HR IMAGE. OF THE 211 SIMULTANEOUS EXPOSURES, ONLY 151 MR AND 137 HR WERE COMPLETELY READ OUT DUE TO A FAILURE OF THE FILM ADVANCE MOTOR. OTHERWISE, EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON MARCH 2, 1967. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- AMS FRAMES HAND ASSEMBLED FROM ORIGINAL  
GRE FRAMELETS

NSSDC ID 67-008A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/15/67 TO 02/23/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS ONE COMPLETE SET OF THIRD GENERATION 20- BY 24-IN. FILM SHEETS. THESE SHEETS WERE PREPARED BY THE ARMY MAP SERVICE (AMS) FROM A NEGATIVE COPY OF THE PRIME GRE RECORD MADE BY EASTMAN KODAK CO. A POSITIVE CONTACT PRINT WAS PREPARED, THEN CUT ALONG THE FIDUCIAL LINES TO SEPARATE INDIVIDUAL FRAMELETS. THESE FRAMELETS WERE MOUNTED ON A TRANSPARENT BACKING IN CORRECT SEQUENCE AND ORIENTATION, AND A FILM NEGATIVE WAS MADE BY CONTACT PRINTING. THE ACTUAL IMAGE MEASURES 15.5 BY 20 IN. FRAME IDENTIFICATION APPEARS ON EACH PRINT. ONE MR PHOTO APPEARS ON ONE FILM SHEET WHEREAS THREE FILM SHEET NEGATIVES ARE REQUIRED FOR ONE HR FRAME. THESE PHOTOGRAPHS HAVE LOST PHOTOMETRIC RELATIONSHIPS USEFUL IN SLOPE DETERMINATION BECAUSE OF THE DENSITY CONTROL TECHNIQUE UTILIZED IN PROCESSING. THIS TECHNIQUE ALSO CAUSED BRIGHT AREAS TO PRINT AS A GRAY TONE. HOWEVER, THE CONTROL TECHNIQUE DOES FACILITATE INTERPRETATION OF THE PHOTOGRAPHS.

DATA SET NAME- KODAK AUTOMATICALLY REASSEMBLED SUBFRAMES

NSSDC ID 67-008A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/15/67 TO 02/23/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS A COMPLETE SET OF LUNAR ORBITER 3 LUNAR SURFACE PHOTOGRAPHY IN THE FORM OF SECOND GENERATION POSITIVE SUBFRAMES ON 9.5-IN. ROLL FILM. THE SUBFRAMES WERE PRODUCED BY EASTMAN KODAK CO. FROM DUPLICATE NEGATIVES OF THE ZERO GENERATION STATION FRAMELETS USING AN AUTOMATIC REASSEMBLY PRINTER. EACH SUBFRAME MEASURES 9.5 BY 18 IN. AND CONTAINS A 9-BY 14-IN. IMAGE AND A DATA BLOCK. THE DATA BLOCK INCLUDES THE SPACECRAFT EXPOSURE NUMBER, THE READOUT SEQUENCE, THE EXPOSURE TIME, AND REASSEMBLY IDENTIFICATION. EACH IMAGE IS COMPOSED OF 14 FRAMELETS, TWO OF WHICH OVERLAP THE NEXT ADJACENT SUBFRAME. THREE SUBFRAME IMAGES ARE REQUIRED FOR A COMPLETE MR PHOTO AND EIGHT FOR A COMPLETE HR PHOTO.

DATA SET NAME- LARC HAND-ASSEMBLED REGENERATED FRAMES

NSSDC ID 67-008A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/15/67 TO 02/23/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH IS A COMPLETE SET OF THE USABLE LUNAR ORBITER 3 PHOTOGRAPHY, CONSISTS OF OVER 600 FIRST GENERATION NEGATIVE 20- BY 24-IN. FILM SHEETS. NASA'S LANGLEY RESEARCH CENTER PREPARED THESE ENHANCED PHOTOGRAPHS FROM ORIGINAL STATION VIDEO TAPES BY ELECTRONICALLY PREPROCESSING THE VIDEO SIGNAL PRIOR TO INPUT TO THE GROUND RECONSTRUCTION EQUIPMENT (GRE). TWO ENHANCEMENT PROCEDURES WERE USED. ONE PROCEDURE INVOLVED VARYING THE PARAMETERS OF GAIN FUNCTION, SIGNAL GAIN, AND SIGNAL OFFSET TO OPTIMIZE DETAIL AND CONTRAST IN THE PHOTOGRAPHIC DATA. THE OTHER INVOLVED THE USE OF AN ELECTRONIC MASK TO REDUCE THE UNDESIRABLE DENSITY GRADIENTS ACROSS THE SCAN AND FRAMELET. BOTH PROCEDURES REQUIRED POINT-BY-POINT EXPOSURE ADJUSTMENTS. THE ENHANCED PHOTOGRAPHS GENERATED FROM THE GRE WERE 35-MM POSITIVE TRANSPARENCIES. THE POSITIVES WERE ASSEMBLED INTO A 20- BY 24-IN. FORMAT, AND CONTACT NEGATIVES WERE MADE. ONE COMPLETE MEDIUM-RESOLUTION FRAME IS CONTAINED ON ONE SHEET WHEREAS THREE SHEETS ARE REQUIRED FOR ONE HIGH-RESOLUTION FRAME. THE PHOTOGRAPHS WERE CONTROLLED FOR SURFACE DETAIL AND ARE NOT RECOMMENDED FOR PHOTOMETRIC STUDIES.

DATA SET NAME- 35-MM MICROFILM FRAME COMPOSITE

NSSDC ID 67-008A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/15/67 TO 02/23/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 3 PHOTOGRAPHY ON ONE REEL OF 35-MM POSITIVE MICROFILM. IT WAS PREPARED AT NSSDC BY MICROFILMING THE BEST PRINT AVAILABLE FROM EITHER DATA SET -01A OR -01B. THE QUALITY OF THE FILM IS SUITABLE FOR STUDIES REQUIRING MINIMUM PRECISION, BUT THIS DATA SET IS INTENDED PRIMARILY FOR SELECTING PHOTOGRAPHS FOR WHICH HIGH QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- LARC FIRST GENERATION 35-MM FRAMELETS

NSSDC ID 67-008A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/15/67 TO 02/23/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 183 ROLLS, EACH AVERAGING APPROXIMATELY 350 FT. OF FIRST GENERATION NEGATIVE 35-MM FILM. THESE ROLLS CONTAIN THE INDIVIDUAL FRAMELETS FOR EACH LUNAR ORBITER 3 PHOTOGRAPH. THIS COMPLETE SET WAS PRODUCED BY THE LANGLEY RESEARCH CENTER FROM THE ORIGINAL (ZERO GENERATION) POSITIVES RECORDED BY THE GROUND RECONSTRUCTION EQUIPMENT (GRE) AT THE GROUND RECEIVING STATIONS. THESE FRAMELETS ARE USEFUL FOR DETAILED ANALYSIS OF LUNAR SURFACE FEATURES.

DATA SET NAME- REVISED PHOTOGRAPHIC SUPPORT DATA ON  
MAGNETIC TAPE

NSSDC ID 67-008A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 02/15/67 TO 02/23/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE SUPPORT DATA NECESSARY FOR ANALYSIS OF THE LUNAR ORBITER 3 PHOTOGRAPHS. THE PARAMETERS FOR EACH PHOTOGRAPH INCLUDE (1) SPACECRAFT LOCATION AND DISTANCE, (2) CAMERA POINTING ANGLES, (3) PHOTO LOCATION AND TIME, AND (4) APPROPRIATE SOLAR AZIMUTHS. THIS VERSION WAS COMPILED BY THE BOEING CO. AND WAS GENERATED IN JANUARY 1970. THESE ARE THE MOST ACCURATE PHOTO SUPPORT DATA AVAILABLE. THE DATA ARE CONTAINED ON ONE TIME-ORDERED, 7-TRACK, 556-BPI, BINARY TAPE THAT WAS PROCESSED ON A UNIVAC 1108 COMPUTER. A DUPLICATE TAPE, PROCESSED ON AN IBM 7094 COMPUTER, IS ALSO HELD BY NSSDC.

EXPERIMENT NAME- SELENODESY

NSSDC ID 67-008A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- W.H. MICHAEL, JR., NASA-LARC, HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 10/09/67

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT INCLUDED A POWER SOURCE, AN OMNIDIRECTIONAL ANTENNA, AND A TRANSPONDER TO OBTAIN INFORMATION FOR DETERMINING THE GRAVITATIONAL FIELD AND PHYSICAL PROPERTIES OF THE MOON. HIGH-FREQUENCY RADIO SIGNALS WERE RECEIVED BY THE SPACECRAFT FROM EARTH TRACKING STATIONS AND RETRANSMITTED TO THE STATIONS TO PROVIDE DOPPLER FREQUENCY MEASUREMENTS (RANGE RATE) AND PROPAGATION TIMES (RANGE). THE TELEMETRY DATA WERE PROCESSED IN REAL TIME BY AN IBM 7044 COMPUTER IN CONJUNCTION WITH AN IBM 7094 COMPUTER. THEY WERE THEN DISPLAYED ON 100-WPM TELETYPE MACHINES, X-Y PLOTTERS, AND BULK PRINTERS FOR ANALYSIS. DATA COVERAGE WAS CONTINUOUS WHILE THE SPACECRAFT WAS VISIBLE FROM EARTH. INFORMATION WAS ACQUIRED DURING THE CISLUNAR, THE FIRST AND SECOND ELLIPSE, AND THE EXTENDED MISSION (FROM END OF PHOTOGRAPHIC MISSION TO LUNAR IMPACT) PHASES OF THE MISSION. DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA WERE ACCUMULATED DURING TRACKING. THE QUALITY OF RECORDED DATA RANGED FROM GOOD TO EXCELLENT.

DATA SET NAME- RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 67-008A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/05/67 TO 10/09/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TCP) PROGRAM. THIS MASTER FILE IS CONTAINED ON SIX BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 CCMFUTER.

DATA SET NAME- MODIFIED DATA (ODP) ON MAGNETIC TAPE

NSSDC ID 67-008A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/05/67 TO 10/09/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THE DATA ARE CONTAINED ON 11 BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 67-008A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/05/67 TO 10/09/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TDP) PROGRAM. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE SIX TAPES OF DATA SET -02A ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED MODIFIED DATA (ODP) ON MAGNETIC  
TAPE

NSSDC ID 67-008A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/05/67 TO 10/09/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE 11 TAPES OF DATA SET -028 ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

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SPACECRAFT NAME- ATS 2  
OTHER NAMES- ATS-A, 1967-031A

NSSDC ID 67-031A

LAUNCH DATE- 04/06/67 DATE LAST SCIENTIFIC DATA RECORDED- 09/22/68

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 319.11 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 04/07/67 ORBIT PERIOD- 219.7 MIN.  
APOGEE- 11180. KM ALT PERIGEE- 186. KM ALT INCLINATION- 28.32 DEGREES

SPACECRAFT BRIEF DESCRIPTION

ATS 2 WAS DESIGNED TO FLY IN AN 11,000-KM-ALTITUDE CIRCULAR EARTH ORBIT TO TEST THE GRAVITY GRADIENT STABILIZATION CONCEPT. IT WAS LAUNCHED APRIL 6, 1967, AND, AS A RESULT OF A FUEL SYSTEM FAILURE IN THE AGENA ROCKET, ACHIEVED AN ELLIPTICAL ORBIT OF ECCENTRICITY 0.45. THE SPACECRAFT COULD NOT BE STABILIZED IN THIS TRAJECTORY. HOWEVER, IN SPITE OF THE TUMBLE AND ROLL, IT WAS DETERMINED THAT SOME OF THE SPACE SCIENCE EXPERIMENTS, WHICH INCLUDED COSMIC-RAY PARTICLE EXPERIMENTS AND FIELD DETECTION EXPERIMENTS, WERE OPERATING CORRECTLY AND SENDING BACK USEFUL DATA. THE EXPERIMENTAL PACKAGE WAS TURNED OPERATIONAL OFF IN OCTOBER 1967. DATA WERE SPORADICALLY RECORDED UNTIL SEPTEMBER 1968. THE SATELLITE DECAYED ON SEPTEMBER 2, 1969.

EXPERIMENT NAME- RADIO ASTRONOMY

NSSDC ID 67-031A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- R.G. STONE, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 10/23/67

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED A 76-M DIPOLE TO OBSERVE RADIO NOISE AT 0.45, 0.7, 0.9, 1.1, 1.6, 2.2, AND 3.0 MHZ. THE RADIO METER WAS OF THE RYLE-VONBERG TYPE AND STEPPED THROUGH THE SEVEN FREQUENCIES AND AN ANTENNA CAPACITANCE MEASURING CHANNEL IN 40 SEC. SINCE THE ANTENNA WAS SHARED WITH ANOTHER



EXPERIMENT, THIS EXPERIMENT WAS TURNED ON ONLY FOR ALTERNATE 10-MIN PERIODS. THE DETECTOR FUNCTIONED NORMALLY, ALTHOUGH INTERFERENCE WAS OFTEN PRESENT IN THE 0.9-MHZ CHANNEL.

DATA SET NAME- RADIO FLUX LISTING ON MICROFILM

NSSDC ID 67-031A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/07/67 TO 10/23/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS A LISTING OF THE OBSERVED RADIO FLUXES, AS A FUNCTION OF TIME, FOR ALL SEVEN CHANNELS. THE DATA, WHICH ARE CONTAINED ON THREE REELS OF 35-MM MICROFILM, ALSO INCLUDE SPACECRAFT ALTITUDE, COLATITUDE, AND LONGITUDE.

DATA SET NAME- PLOTS OF SINGLE FREQUENCY FLUX VS TIME  
ON MICROFILM

NSSDC ID 67-031A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/09/67 TO 10/23/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PLOTS ON EIGHT REELS OF 35-MM MICROFILM. EACH PLOT CONTAINS THE SPACECRAFT ALTITUDE AT THE BEGINNING AND THE END OF THE PLOT AND THE LOGARITHM OF THE OUTPUT FROM ONE RADIOMETER CHANNEL AS A FUNCTION OF TIME. DATA FROM ALL CHANNELS ARE PLOTTED, WITH EACH PLOT CONTAINING 1 HR OF DATA. BOTH COARSE AND FINE DATA ARE GIVEN. THE COARSE DATA WERE DERIVED FROM THE ERROR SIGNAL THAT DROVE THE NOISE SOURCE OF THE RYLE-VONBERG RECEIVER. THE FINE DATA WERE DERIVED FROM THE NOISE SOURCE OUTPUT AND HAVE A LONGER TIME CONSTANT. THE FREQUENCIES ARE LABELED ON THE PLOTS IN ASCENDING ORDER (CHANNEL 1 IS 0.45 MHZ, CHANNEL 2 IS 0.7 MHZ, ETC.). THE DATA ARE ANALYZED DATA SUPPLIED BY THE EXPERIMENTER.

DATA SET NAME- PLOTS OF MULTIFREQUENCY FLUX VS TIME ON  
MICROFILM

NSSDC ID 67-031A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/07/67 TO 10/23/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PLOTS ON ONE REEL OF 35-MM MICROFILM. EACH PLOT CONTAINS THE OUTPUTS OF SIX CHANNELS OF THE RADIOMETER PLOTTED AS A FUNCTION OF TIME. EACH PLOT CONTAINS ABOUT 10 MIN OF DATA. THE SPACECRAFT

ALTITUDE IS ALSO GIVEN AT THE BEGINNING AND END OF EACH PLOT. CHANNEL 3 (0.9 MHZ) DATA ARE NOT GIVEN BECAUSE TOO MUCH INTERFERENCE WAS PRESENT FOR THE DATA FROM THIS CHANNEL TO BE USEFUL. THESE ARE ANALYZED DATA SUPPLIED BY THE EXPERIMENTER.

EXPERIMENT NAME- OMNIDIRECTIONAL PROTON AND ELECTRON  
DETECTORS

NSSDC ID 67-031A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, SD

INVESTIGATORS- C.E. MCILWAIN, U OF CALIFORNIA, SD , LA JOLLA, CALIF.  
R.W. FILLIUS, U OF CALIFORNIA, SD , LA JOLLA, CALIF.

DATE LAST USEFUL DATA RECORDED- 10/23/67

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED PRIMARILY TO MEASURE FLUCTUATIONS IN 12-MEV PROTONS ON THE TIME SCALE OF THEIR LONGITUDINAL DRIFT PERIOD. THE PARTICLE FLUXES WERE MEASURED BY THREE SPHERICAL PLASTIC SCINTILLATORS, EACH OF WHICH HAD FIVE ASSOCIATED ELECTRONIC DISCRIMINATION STATES. EACH OF TWO SCINTILLATORS, DIFFERING IN THEIR GEOMETRICAL FACTORS, SEPARATELY MEASURED OMNIDIRECTIONAL FLUXES OF PROTONS ABOVE 12 MEV AND OF ELECTRONS ABOVE 0.44, 0.63, AND 1.31 MEV. THE THIRD SCINTILLATOR SEPARATELY MEASURED OMNIDIRECTIONAL FLUXES OF PROTONS ABOVE 20 MEV AND OF ELECTRONS ABOVE 1.10, 1.27, AND 1.93 MEV. THE FIFTH DISCRIMINATION LEVEL OF EACH SCINTILLATOR WAS USED TO CHECK THE RELATIVE SETTING OF THE MAIN PROTON LEVEL AND TO CHECK FOR ELECTRON CONTAMINATION IN THE PROTON LEVEL. EVERY 5.12 SEC, COUNTS WERE ACCUMULATED FOR 4.46 SEC IN THE PROTON DISCRIMINATION STATE OF EACH OF THE THREE DETECTORS AND WERE THEN TELEMETERED. EVERY 81.92 SEC, COUNTS WERE ACCUMULATED DURING ONE OR TWO 4.46-SEC INTERVALS IN EACH OF THE OTHER DISCRIMINATION STATES (AND ONCE IN A CALIBRATION MODE) OF EACH OF THE THREE DETECTORS AND WERE TELEMETERED. USEFUL DATA WERE OBTAINED FROM LAUNCH UNTIL OCTOBER 23, 1967.

DATA SET NAME- PARTICLE COUNT RATES ON TAPE

NSSDC ID 67-031A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/07/67 TO 10/23/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THIRTY-ONE 7-TRACK, 800-BPI, CDC 3600, BINARY MAGNETIC TAPES. EACH PHYSICAL RECORD CONTAINS 10 LOGICAL RECORDS OF TWENTY-SEVEN 48-BIT WORDS EACH. EACH LOGICAL RECORD CONTAINS DATA FOR A 5.12-SEC TELEMETRY SEQUENCE. THESE DATA INCLUDE TIME, THREE DEAD-TIME-CORRECTED PROTON COUNT RATES, ONE COUNT RATE FROM A NON-PROTON DISCRIMINATION STATE, EPHEMERIS INFORMATION (INCLUDING B AND L), TEMPERATURE AND VOLTAGE LEVELS, AND ERROR FLAGS IF APPROPRIATE. TIME

COVERAGE EXTENDS FROM APRIL 7, 1967, THROUGH OCTOBER 23, 1967. A LIST OF BAD DATA VALUES DETECTED BY THE EXPERIMENTERS SUBSEQUENT TO SUBMISSION OF DATA TO NSSDC IS AVAILABLE ON MICROFILM AT NSSDC.

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SPACECRAFT NAME- SURVEYOR 3  
OTHER NAMES- 1967-035A

NSSDC ID 67-035A

LAUNCH DATE- 04/17/67 DATE LAST SCIENTIFIC DATA RECORDED- 05/04/67

AGENCY- NASA SPACECRAFT WEIGHT IN ORBIT- 302 KG

ORBIT TYPE-	EPOCH-	/	/	ORBIT PERIOD-	MIN.
APOGEE- KM ALT	PERIGEE-		KM ALT	INCLINATION-	DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

SURVEYOR 3 WAS THE SECOND SPACECRAFT IN THE SURVEYOR SERIES TO ACHIEVE A SOFT LANDING ON THE LUNAR SURFACE. THE MAIN PURPOSE OF THE MISSION WAS TO DETERMINE VARIOUS CHARACTERISTICS OF THE LUNAR TERRAIN IN PREPARATION FOR APOLLO LUNAR LANDING MISSIONS. EQUIPMENT ON BOARD INCLUDED A TELEVISION CAMERA AND AUXILIARY MIRRORS, A SOIL MECHANICS SURFACE SAMPLER, STRAIN GAGES ON THE SPACECRAFT LANDING LEGS, AND NUMEROUS ENGINEERING SENSORS. THE SPACECRAFT WAS LAUNCHED INTO A SELENOGRAPHIC TRAJECTORY ON APRIL 17, 1967, AND LANDED ON THE MOON AT 2.54 DEG S LATITUDE, 23.34 DEG W LONGITUDE IN THE SOUTHEASTERN PART OF OCEANUS PROCELLARUM ON APRIL 20, 1967. TOUCHDOWN ON THE LUNAR SURFACE OCCURRED THREE TIMES BECAUSE THE VERNIER ENGINES CONTINUED TO FIRE DURING THE FIRST TWO TOUCHDOWNS CAUSING THE SPACECRAFT TO LIFT OFF THE SURFACE. A LARGE VOLUME OF NEW DATA ON THE STRENGTH, TEXTURE, AND STRUCTURE OF LUNAR MATERIAL WAS TRANSMITTED BY THE SPACECRAFT, IN ADDITION TO THE LUNAR PHOTOGRAPHY TRANSMISSION. THE LAST DATA WERE RETURNED ON MAY 4, 1967.

EXPERIMENT NAME- TELEVISION

NSSDC ID 67-035A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- E.M. SHOEMAKER, CAL TECH, PASADENA, CALIF.  
R.M. BATSON, US GEOLOGICAL SURVEY, FLAGSTAFF, ARIZ.

DATE LAST USEFUL DATA RECORDED- 05/03/67

#### EXPERIMENT BRIEF DESCRIPTION

THE TV CAMERA CONSISTED OF A VIDICON TUBE, 25- AND 100-MM FOCAL LENGTH LENSES, SHUTTERS, FILTERS, AND IRIS MOUNTED ALONG AN AXIS INCLINED APPROXIMATELY 16 DEG TO THE CENTRAL AXIS OF THE SPACECRAFT. THE CAMERA WAS MOUNTED UNDER A MIRROR THAT COULD BE MOVED IN AZIMUTH AND ELEVATION. CAMERA

OPERATION WAS TOTALLY DEPENDENT UPON THE RECEIPT OF THE PROPER COMMAND STRUCTURE FROM EARTH. FRAME-BY-FRAME COVERAGE OF THE LUNAR SURFACE WAS OBTAINED OVER 360 DEG IN AZIMUTH AND FROM +40 DEG ABOVE THE PLANE NORMAL TO THE CAMERA Z AXIS TO -65 DEG BELOW THIS PLANE. BOTH 600-LINE AND 200-LINE MODES OF OPERATION WERE USED. THE 200-LINE MODE TRANSMITTED OVER AN OMNIDIRECTIONAL ANTENNA AND SCANNED ONE FRAME EVERY 61.8 SEC. A COMPLETE VIDEO TRANSMISSION OF EACH 200-LINE PICTURE REQUIRED 20 SEC AND UTILIZED A BANDWIDTH OF 1.2 KHZ. THE 600-LINE PICTURES WERE TRANSMITTED OVER A DIRECTIONAL ANTENNA. THESE FRAMES WERE SCANNED EVERY 3.6 SEC. EACH 600-LINE PICTURE REQUIRED NOMINALLY 1 SEC TO BE READ FROM THE VIDICON AND REQUIRED A 220-KHZ BANDWIDTH FOR TRANSMISSION. THE DATA TRANSMISSIONS WERE CONVERTED TO A STANDARD TELEVISION SIGNAL. THE TELEVISION IMAGES WERE DISPLAYED ON EARTH ON A SLOW SCAN MONITOR COATED WITH A LONG PERSISTENCY PHOSPHOR. THE PERSISTENCY WAS SELECTED TO OPTIMALLY MATCH THE NOMINAL MAXIMUM FRAME RATE. ONE FRAME OF TV IDENTIFICATION WAS RECEIVED FOR EACH INCOMING TV FRAME AND WAS DISPLAYED IN REAL TIME AT A RATE COMPATIBLE WITH THAT OF THE INCOMING IMAGE. THESE DATA WERE RECORDED ON A VIDEO MAGNETIC TAPE RECORDER. THE CAMERA RETURNED 6315 PICTURES BETWEEN APRIL 20 AND MAY 3, 1967, INCLUDING VIEWS OF THE SPACECRAFT, LUNAR SURVEYS, AND VIEWS OF THE SOIL MECHANICS SURFACE SAMPLER AND OF THE EARTH DURING SOLAR ECLIPSE.

DATA SET NAME- ORIGINAL 70-MM PHOTOGRAPHY

NSSDC ID 67-035A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/20/67 TO 05/03/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS PHOTOGRAPHS OF THE LUNAR SURFACE TAKEN BETWEEN APRIL 20 AND MAY 3, 1967. INCLUDED ARE WIDE- AND NARROW-ANGLE PANORAMAS, FOCUS-RANGING SURVEYS, PHOTOMETRIC SURVEYS, SURFACE SAMPLER SURVEYS, SURFACE SAMPLER OPERATIONS SUPPORT, SPECIAL AREA SURVEYS, AND CELESTIAL PHOTOGRAPHY. THE PHOTOGRAPHS ARE SECOND GENERATION FILM NEGATIVES ON 70-MM REELS IN 14 CANISTERS. THE NEGATIVE FILM WAS PRODUCED FROM THE ORIGINAL NEGATIVE VIA A MASTER POSITIVE.

DATA SET NAME- DIGITALLY PROCESSED 35-MM NEGATIVE  
PHOTOGRAPHY

NSSDC ID 67-035A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/21/67 TO 04/30/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 126 35-MM FIRST GENERATION FILM NEGATIVES, FOR SELECTED PHOTOGRAPHS, PRODUCED AFTER ANALOG-TO-DIGITAL CONVERSION OF DATA TRANSMITTED BY THE SATELLITE. THERE ARE 28 NEGATIVES FROM THE DEBLOCK AND REGISTER (D+R) PROGRAM AND 98 FROM THE SINE WAVE RESPONSE FILTER (SWRF) PROGRAM. THE D+R PROGRAM ADAPTS THE ANALOG-TO-DIGITAL CONVERSION OUTPUT TO

A FORM MORE EASILY ADAPTABLE TO PROCESSING OPERATIONS. THE PROGRAM CONSISTS OF 600 DIGITAL RECORDS, WRITTEN ON MAGNETIC TAPE AT 800 BPI, REPRESENTING 600 PICTURE LINES. EACH RECORD NORMALLY CONTAINS 684 CHARACTERS CORRESPONDING TO THE PICTURE ELEMENTS (PIXELS) WITHIN A LINE. THIS IMAGE IS DIGITIZED ONLY. THE SWRF PROGRAM IS APPLIED TO THE RAW IMAGE AND RESTORES HIGH-FREQUENCY DATA (FINE DETAIL IN PICTURE) BOTH IN THE HORIZONTAL DIRECTION ALONG THE CAMERA SCAN LINES AND IN THE VERTICAL DIRECTION. PICTURES PROCESSED BY SWRF WILL APPEAR MORE NOISY THAN THE ORIGINALS BUT WILL ALSO BE MUCH SHARPER.

DATA SET NAME- 4- BY 5-IN. MOSAIC NEGATIVE FILM SHEETS NSSDC ID 67-035A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/20/67 TO 05/01/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 76 MOSAIC PHOTOGRAPHS ON 4- BY 5-IN. BLACK AND WHITE NEGATIVE FILM SHEETS. THE MOSAICS WERE COMPILED FROM THE SURVEYOR 3 PHOTOGRAPHS TAKEN BETWEEN APRIL 20 AND MAY 1, 1967. INCLUDED ARE ANALYTICAL, IMPROVED, RECTIFIED, AND SPHERICAL MOSAICS. ANALYTICAL MOSAICS ARE MADE BY PLACING THE PICTURES AT THEIR CORRECT NOMINAL LOCATION ON A PREPARED GRID WITHOUT ATTEMPTING TO MATCH IMAGES. IMPROVED MOSAICS PRESENT A MORE COHERENT VIEW OF SMALL AREAS OF THE PANORAMA BECAUSE THE PICTURE IMAGES ARE CAREFULLY MATCHED. RECTIFIED MOSAICS ARE MADE BY TRANSFORMING THE IMAGE PLANE OF THE INDIVIDUAL PICTURES TO A PLANE OTHER THAN THAT PERPENDICULAR TO THE LINE OF SIGHT OF THE CAMERA. SPHERICAL, SEMI-IMPROVED, OR SEMI-ENHANCED MOSAICS ARE MADE ON THE INSIDE OF LARGE HEMISPHERES, BUT THEY ARE OTHERWISE SIMILAR TO IMPROVED MOSAICS. THIS PROCESS DOES NOT DISTORT PANORAMIC IMAGES AS DOES THE FLAT PROCESSING USED FOR THE OTHER MOSAICS.

DATA SET NAME- TELEVISION PHOTOGRAPHIC IDENTIFICATION NSSDC ID 67-035A-01E  
ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/20/67 TO 05/03/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS IDENTIFYING INFORMATION FOR SURVEYOR 3 PHOTOGRAPHS INCLUDING DAY OF YEAR, HOUR, MINUTE, SECOND, FILTER NUMBER, SURVEY NUMBER, AZIMUTH, ELEVATION, FOCUS, IRIS SETTING, AND LENS FOCAL LENGTH FOR EACH PHOTOGRAPH. THE DATA SET IS CONTAINED ON ONE 7-TRACK, 556-BPI, MIXED MODE MAGNETIC TAPE AND IS ORDERED BY TIME.

DATA SET NAME- ORIGINAL 70-MM REGENERATED PHOTOGRAPHY

NSSDC ID 67-035A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/20/67 TO 05/03/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE 70-MM LUNAR PHOTOGRAPHIC DATA THAT WERE ENHANCED BY COMPUTER PROGRAMS TO REDUCE NOISE, STREAKS, AND OTHER DISTORTIONS. THIS PROCESS GENERATES FILM WITH A SHARPER IMAGE THAN THAT POSSIBLE FROM NONREGENERATED FILM. A MASKING PROCESS ALSO MAKES THESE PICTURES MORE UNIFORM THAN THE ORIGINAL PHOTOGRAPHS. CORRECT TV IDENTIFICATION IS INCLUDED ON EACH FRAME. THE DATA ARE CN FIRST GENERATION 70-MM NEGATIVE FILM IN 12 CANISTERS. INCLUDED ARE PHOTOGRAPHS TAKEN BETWEEN APRIL 20 AND MAY 3, 1967.

DATA SET NAME- SUNSET SEQUENCE OF LUNAR FIRST DAY ON  
16-MM MOVIE FILM

NSSDC ID 67-035A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/03/67 TO 05/03/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS AN ANIMATED SEQUENCE OF 121 WIDE-ANGLE PHOTOGRAPHS AND NINE NARROW-ANGLE PHOTOGRAPHS OF THE LUNAR FIRST DAY SUNSET AND TWIN PROJECTIONS ON THE HORIZON. THE SEQUENCES ARE SHOWN IN NORMAL AND SLOW MOTION AND COVER 1116 TO 2055 UT ON MAY 3, 1967. THIS 16-MM MOVIE FILM, WHICH RUNS 3-1/2 MIN, IS COMPOSED OF NEGATIVES RECEIVED FROM PRIMARY TV DATA.

EXPERIMENT NAME- SOIL MECHANICS SURFACE SAMPLER

NSSDC ID 67-035A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- E.M. SHOEMAKER, CAL TECH , PASADENA, CALIF.  
R.F. SCOTT, CAL TECH , PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 05/02/67

EXPERIMENT BRIEF DESCRIPTION

THE SOIL MECHANICS SURFACE SAMPLER WAS DESIGNED TO DIG, SCRAPE, AND TRENCH THE LUNAR SURFACE AND TO TRANSPORT LUNAR SURFACE MATERIAL WHILE BEING PHOTOGRAPHED SO THAT THE PROPERTIES OF THE LUNAR SURFACE COULD BE

DETERMINED. THE SAMPLER WAS MOUNTED BELOW THE TELEVISION CAMERA AND CONSISTED PRIMARILY OF A SCOOP APPROXIMATELY 12 CM LONG AND 5 CM WIDE. THE SCOOP CONSISTED OF A CONTAINER, A SHARPENED BLADE, AND AN ELECTRICAL MOTOR TO OPEN AND CLOSE THE CONTAINER. A SMALL FOOTPAD WAS ATTACHED TO THE SCOOP DOOR TO PRESENT A FLAT SURFACE TO THE LUNAR SURFACE. THE SCOOP WAS CAPABLE OF HOLDING A MAXIMUM QUANTITY OF APPROXIMATELY 3.2 CM DIAMETER OF SOLID LUNAR MATERIAL AND A MAXIMUM OF 100 CC OF GRANULAR MATERIAL. THE SCOOP WAS MOUNTED ON A PANTOGRAPH ARM THAT COULD BE EXTENDED ABOUT 1.5 M OR RETRACTED CLOSE TO THE SPACECRAFT MOTOR DRIVE. THE ARM COULD ALSO BE MOVED FROM AN AZIMUTH OF +40 TO -72 DEG OR BE ELEVATED 13 CM BY MOTOR DRIVES. IT COULD ALSO BE DROPPED ONTO THE LUNAR SURFACE UNDER FORCE PROVIDED BY GRAVITY AND A SPRING. THE SURFACE SAMPLER PERFORMED SEVEN BEARING TESTS, FOUR TRENCH TESTS, AND 13 IMPACT TESTS. THE TOTAL OPERATING TIME WAS 18 HR, 22 MIN ON 10 SEPARATE OCCASIONS. MEASUREMENTS OF MOTOR CURRENTS AND FORCES APPLIED TO THE SURFACE WERE NOT OBTAINED DUE TO THE STATE OF THE SPACECRAFT TELEMETRY FOLLOWING LANDING ON THE LUNAR SURFACE. HOWEVER, ESTIMATIONS WERE POSSIBLE. THE SMALL SPRING CONSTANT OF THE TORQUE SPRING PRECLUDED THE DETERMINATION OF DENSITY FROM THE IMPACT TESTS. PENETRATIONS OF 3.8 TO 5 CM WERE OBTAINED FROM THE BEARING TESTS, AND A 17.5-CM DEPTH WAS REACHED DURING TRENCHING OPERATIONS. THE DESIGN OF THE MECHANISM AND ITS ELECTRONIC AUXILIARY WAS MORE THAN ADEQUATE FOR THE LUNAR SURFACE OPERATIONS.

DATA SET NAME- ANIMATED FIELD SEQUENCE MOSAICS

NSSDC ID 67-035A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/27/67 TO 04/27/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS AN ANIMATED SEQUENCE OF SURVEYOR 3 MOSAICS MADE FROM PHOTOGRAPHS TRANSMITTED DURING TRENCHING OPERATIONS OF THE SURFACE SAMPLER BETWEEN 0958 UT AND 1030 UT ON APRIL 27, 1967. THE FILM SHOWS THE CRUSTING EFFECTS OF THE LUNAR SURFACE. THE DATA SET IS CONTAINED ON ONE 16-MM MOVIE FILM THAT RUNS FOR 2 MIN.

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SPACECRAFT NAME- LUNAR ORBITER 4

NSSDC ID 67-041A

OTHER NAMES- LUNAR ORBITER-D, ORBITER IV, 1967-041A

LAUNCH DATE- 05/04/67

DATE LAST SCIENTIFIC DATA RECORDED- 07/11/67

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT-

387 KG

ORBIT TYPE- SELENOCENTRIC

EPOCH- 05/11/67

ORBIT PERIOD- 720 MIN.

APOGEE- 6110 KM RAD

PERIGEE- 2700 KM RAD

INCLINATION-

85 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

LUNAR ORBITER 4 WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE

LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR THE SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENODETTIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISLUNAR TRAJECTORY AND INJECTED INTO AN ELLIPTICAL LUNAR ORBIT FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM, WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM MAY 11 TO 26, 1967, AND READOUT OCCURRED THROUGH JUNE 1, 1967. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS USED FOR TRACKING PURPOSES UNTIL IT IMPACTED THE LUNAR SURFACE DUE TO NATURAL DECAY OF THE ORBIT NO LATER THAN OCTOBER 31, 1967, AT APPROXIMATELY 22 DEG TO 30 DEG W LONGITUDE.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES

NSSDC ID 67-041A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- L.J. KOSOFKY, NASA HEADQUARTERS , WASHINGTON, D.C.  
I.G. RECENT, NASA-LARC , HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 05/26/67

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR MAPPING AND FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. CONTINUAL AUTOMATIC SEQUENCES OF PHOTOS WERE OBTAINED. AT AN ALTITUDE OF 2700 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE SYSTEM PHOTOGRAPHED OVER 65 PERCENT OF THE LUNAR SURFACE. AT APOLUNE, ON THE MOON'S FAR SIDE AT ABOUT 6110-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BUILT PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEPED 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 196 SIMULTANEOUS EXPOSURES, ONLY 123 MR AND 137 HR WERE COMPLETELY READ OUT. PROBLEMS WITH THE READOUT LOOPER AND THE THERMAL DOOR CAUSED THE LOSS OF PHOTOGRAPHS, AND FOGGING OF THE WINDOW



RENDERED SOME PHOTOGRAPHS UNUSABLE. OTHERWISE, EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON JUNE 1, 1967. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- AMS FRAMES HAND ASSEMBLED FROM ORIGINAL  
GRE FRAMELETS

NSSDC ID 67-041A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/11/67 TO 05/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS ONE COMPLETE SET OF THIRD GENERATION 20- BY 24-IN. FILM SHEETS. THESE SHEETS WERE PREPARED BY THE ARMY MAP SERVICE (AMS) FROM A NEGATIVE COPY OF THE PRIME GRE RECORD MADE BY EASTMAN KODAK CO. A POSITIVE CONTACT PRINT WAS PREPARED, THEN CUT ALONG THE FIDUCIAL LINES TO SEPARATE INDIVIDUAL FRAMELETS. THESE FRAMELETS WERE MOUNTED ON A TRANSPARENT BACKING IN CORRECT SEQUENCE AND ORIENTATION, AND A FILM NEGATIVE WAS MADE BY CONTACT PRINTING. THE ACTUAL IMAGE MEASURES 15.5 BY 20 IN. FRAME IDENTIFICATION APPEARS ON EACH PRINT. ONE MR PHOTO APPEARS ON ONE FILM SHEET WHEREAS THREE FILM SHEET NEGATIVES ARE REQUIRED FOR ONE HR FRAME. THESE PHOTOGRAPHS HAVE LOST PHOTOMETRIC RELATIONSHIPS USEFUL IN SLOPE DETERMINATION BECAUSE OF THE DENSITY CONTROL TECHNIQUE UTILIZED IN PROCESSING. THIS TECHNIQUE ALSO CAUSED BRIGHT AREAS TO PRINT AS A GRAY TONE. HOWEVER, THE CONTROL TECHNIQUE DOES FACILITATE INTERPRETATION OF THE PHOTOGRAPHS.

DATA SET NAME- LARC HAND-ASSEMBLED REGENERATED FRAMES

NSSDC ID 67-041A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/11/67 TO 05/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH IS A COMPLETE SET OF THE USABLE LUNAR ORBITER 4 PHOTOGRAPHY, CONSISTS OF OVER 500 FIRST GENERATION NEGATIVE 20- BY 24-IN. FILM SHEETS. NASA'S LANGLEY RESEARCH CENTER PREPARED THESE ENHANCED PHOTOGRAPHS FROM ORIGINAL STATION VIDEO TAPES BY ELECTRONICALLY PREPROCESSING THE VIDEO SIGNAL PRIOR TO INPUT TO THE GROUND RECONSTRUCTION EQUIPMENT (GRE). TWO ENHANCEMENT PROCEDURES WERE USED. ONE PROCEDURE INVOLVED VARYING THE PARAMETERS OF GAIN FUNCTION, SIGNAL GAIN, AND SIGNAL OFFSET TO OPTIMIZE DETAIL AND CONTRAST IN THE PHOTOGRAPHIC DATA. THE OTHER INVOLVED THE USE OF AN ELECTRONIC MASK TO REDUCE THE UNDESIRABLE DENSITY GRADIENTS ACROSS THE SCAN AND FRAMELET. BOTH PROCEDURES REQUIRED POINT-BY-POINT EXPOSURE ADJUSTMENTS. THE ENHANCED PHOTOGRAPHS GENERATED FROM THE GRE WERE 35-MM POSITIVE TRANSPARENCIES. THE POSITIVES WERE ASSEMBLED INTO A 20- BY 24-IN. FORMAT, AND CONTACT NEGATIVES WERE MADE. ONE

COMPLETE MR FRAME IS CONTAINED ON ONE SHEET WHEREAS THREE SHEETS ARE REQUIRED FOR ONE FR FRAME. THE PHOTOGRAPHS WERE CONTROLLED FOR SURFACE DETAIL AND ARE NOT RECOMMENDED FOR PHOTOMETRIC STUDIES.

DATA SET NAME- 35-MM MICROFILM FRAME COMPOSITE

NSSDC ID 67-041A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/11/67 TO 05/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 4 PHOTOGRAPHY ON ONE REEL OF 35-MM POSITIVE MICROFILM. IT WAS PREPARED AT NSSDC BY MICROFILMING THE BEST PRINT AVAILABLE FROM EITHER DATA SET -01A OR -01B. THE QUALITY OF THE FILM IS SUITABLE FOR STUDIES REQUIRING MINIMUM PRECISION, BUT THIS DATA SET IS INTENDED PRIMARILY FOR SELECTING PHOTOGRAPHS FOR WHICH HIGH QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- LARC FIRST GENERATION 35-MM FRAMELETS

NSSDC ID 67-041A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/11/67 TO 05/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 175 ROLLS, EACH AVERAGING APPROXIMATELY 350 FT. OF FIRST GENERATION NEGATIVE 35-MM FILM. THESE ROLLS CONTAIN THE INDIVIDUAL FRAMELETS FOR EACH LUNAR ORBITER 4 PHOTOGRAPH. THIS COMPLETE SET WAS PRODUCED BY THE LANGLEY RESEARCH CENTER FROM THE ORIGINAL (ZERO GENERATION) POSITIVES RECORDED BY THE GROUND RECONSTRUCTION EQUIPMENT (GRE) AT THE GROUND RECEIVING STATIONS. THESE FRAMELETS ARE USEFUL FOR DETAILED ANALYSIS OF LUNAR SURFACE FEATURES.

DATA SET NAME- REVISED PHOTOGRAPHIC SUPPORT DATA ON  
MAGNETIC TAPE

NSSDC ID 67-041A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/11/67 TO 05/26/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE SUPPORT DATA NECESSARY FOR ANALYSIS OF THE LUNAR ORBITER 4 PHOTOGRAPHS. THE PARAMETERS FOR EACH PHOTOGRAPH INCLUDE (1) SPACECRAFT LOCATION AND DISTANCE, (2) CAMERA POINTING ANGLES, (3) PHOTO LOCATION AND TIME, AND (4) APPROPRIATE SOLAR AZIMUTHS. THIS VERSION WAS

COMPILED BY THE BOEING CO. AND WAS GENERATED IN JANUARY 1970. THESE ARE THE MOST ACCURATE PHOTO SUPPORT DATA AVAILABLE. THE DATA ARE CONTAINED ON ONE TIME-ORDERED, 7-TRACK, 556-BPI, BINARY TAPE THAT WAS PROCESSED ON A UNIVAC 1108 COMPUTER. A DUPLICATE TAPE, PROCESSED ON AN IBM 7094 COMPUTER, IS ALSO HELD BY NSSDC.

EXPERIMENT NAME- SELENODESY

NSSDC ID 67-041A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- W.H. MICHAEL, JR., NASA-LARC, HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 07/11/67

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT INCLUDED A POWER SOURCE, AN OMNIDIRECTIONAL ANTENNA, AND A TRANSPONDER TO OBTAIN INFORMATION FOR DETERMINING THE GRAVITATIONAL FIELD AND PHYSICAL PROPERTIES OF THE MOON. HIGH-FREQUENCY RADIO SIGNALS WERE RECEIVED BY THE SPACECRAFT FROM EARTH TRACKING STATIONS AND RETRANSMITTED TO THE STATIONS TO PROVIDE DOPPLER FREQUENCY MEASUREMENTS. THE TELEMETRY DATA WERE PROCESSED IN REAL TIME ON AN IBM 7044 COMPUTER IN CONJUNCTION WITH AN IBM 7094 COMPUTER. THEY WERE THEN DISPLAYED ON 100-WPM TELETYPE MACHINES, X-Y PLOTTERS, AND BULK PRINTERS FOR ANALYSIS. DATA COVERAGE WAS CONTINUOUS WHILE THE SPACECRAFT WAS VISIBLE FROM EARTH. INFORMATION WAS ACQUIRED DURING THE CISELUNAR, THE PHOTO ELLIPSE, AND THE EXTENDED MISSION (FROM END OF THE PHOTOGRAPHIC MISSION TO JULY 11, 1967) PHASES OF THE MISSION. DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA WERE ACCUMULATED DURING TRACKING. THE QUALITY OF RECORDED DATA RANGED FROM GOOD TO EXCELLENT.

DATA SET NAME- RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 67-041A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/04/67 TO 07/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TDP) PROGRAM. THIS MASTER FILE IS CONTAINED ON FIVE BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- MODIFIED DATA (CDP) ON MAGNETIC TAPE

NSSDC ID 67-041A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/04/67 TO 07/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THE DATA ARE CONTAINED ON EIGHT BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 67-041A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/04/67 TO 07/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TCP) PROGRAM. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE FIVE TAPES OF DATA SET -02A ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED MODIFIED DATA (ODP) ON MAGNETIC  
TAPE

NSSDC ID 67-041A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/04/67 TO 07/11/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE EIGHT TAPES OF DATA SET -02B ONTO ONE BINARY, 7-TRACK,

556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

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SPACECRAFT NAME- ARIEL 3  
OTHER NAMES- UK 3, 1967-042A, UK-E  
NSSDC ID 67-042A  
LAUNCH DATE- 05/05/67 DATE LAST SCIENTIFIC DATA RECORDED- 09/--/69  
AGENCY- UK-NASA SPACECRAFT WEIGHT IN ORBIT- 89.8 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 05/05/67 ORBIT PERIOD- 96 MIN.  
APOGEE- 600. KM ALT PERIGEE- 494. KM ALT INCLINATION- 80.181 DEGREES

SPACECRAFT BRIEF DESCRIPTION

ARIEL 3 WAS DESIGNED TO FURTHER THE PREVIOUS UK SATELLITE INVESTIGATIONS IN SPACE. IT WAS A SMALL OBSERVATORY WITH FIVE EXPERIMENTS. THE SPACECRAFT CONSISTED OF A 57-CM-HIGH, 12-SIDED PRISM WITH 69.6 CM BETWEEN ANY PAIR OF PARALLEL SIDES. A 24.2-CM-HIGH CONICAL STRUCTURE, BEARING VARIOUS ANTENNAS, WAS MATED TO THE TOP OF THE PRISM. FROM THE LOWER END OF THE PRISM, FOUR PADDLES EXTENDED DIAGONALLY DOWNWARD AT AN ANGLE OF 25 DEG FROM THE SPIN AXIS NORMAL. TWO SETS OF ANTENNAS WERE STRUNG AROUND THE OUTER ENDS OF THESE PADDLES. THE PADDLES ALSO SERVED AS MOUNTS FOR SOME OF THE INSTRUMENT SENSORS. SOLAR CELLS FOR POWER WERE MOUNTED BOTH ON THE SIDES OF THE PRISM AND ON THE PADDLES. THE SPACECRAFT WAS INITIALLY SPIN STABILIZED AT ABOUT 31 RPM BUT SLOWED TO ABOUT 12 RPM BY THE END OF THE FIRST YEAR IN ORBIT. ATTITUDE AND SPIN WERE MONITORED BY A COMBINATION OF ONBOARD SUN SENSORS AND BY OPTICAL OBSERVATIONS OF SOLAR REFLECTION FROM A SERIES OF SIX MIRRORS MOUNTED NEAR THE SATELLITE EQUATOR. A TAPE RECORDER WAS INCLUDED TO OBTAIN DATA FOR GLOBAL SURVEYS OF OBSERVED VARIABLES. EXPERIMENT OUTPUT FOR OVER ONE ORBIT COULD BE RECORDED IN A LOW-SPEED MODE, WITH ONE COMPLETE SET OF SENSOR DATA EACH 0.9 SEC. A HIGH-SPEED MODE OF OBSERVATION PROVIDED FOR REAL-TIME TELEMETRY WITH A COMPLETE SET OF SENSOR SAMPLING 55 TIMES PER SECOND. THE DATA WERE DUMPED IN 140 SEC IN THE HIGH-SPEED MODE. ALL EXPERIMENTS OPERATED WELL. A MOLECULAR OXYGEN EXPERIMENT DETERIORATED RAPIDLY, AS EXPECTED, AND COMPLETELY FAILED WITHIN 2 MONTHS AFTER LAUNCH DUE TO LIMITATIONS IN SENSOR DESIGN. ON OCTOBER 24, 1967, THE TAPE RECORDER BEGAN TO MALFUNCTION. IT OPERATED SPORADICALLY UNTIL ITS COMPLETE FAILURE ON FEBRUARY 6, 1968. REAL-TIME OPERATION PROVIDED CONSIDERABLE DATA UNTIL A SATELLITE POWER FAILURE IN DECEMBER 1968 RESTRICTED OPERATION TO DAYLIGHT HOURS ONLY. BY APRIL 1969, OPERATIONS HAD DECREASED TO ABOUT 15 PASSES PER WEEK, AND OBSERVATIONS WERE MADE ONLY FROM WINKFIELD, ENGLAND. AT THIS TIME, THE SATELLITE SPIN HAD DECAYED TO 1 RPM. THE SATELLITE WAS TURNED OFF IN SEPTEMBER 1969 AND DECAYED ON DECEMBER 5, 1970.

EXPERIMENT NAME- LANGMUIR PROBE

NSSDC ID 67-042A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF BIRMINGHAM

INVESTIGATORS- J. SAYERS, U OF BIRMINGHAM , BIRMINGHAM, ENGLAND

DATE LAST USEFUL DATA RECORDED- 09/01/69

EXPERIMENT BRIEF DESCRIPTION

ELECTRON TEMPERATURES WERE DETERMINED BY EMPLOYING AN EXTENSION OF THE LANGMUIR PROBE TECHNIQUE. TWO IDENTICAL RHODIUM-PLATED SPHERICAL PROBES, 3.2 CM IN DIAMETER AND WITH A CENTER-TO-CENTER DISTANCE OF 6.4 CM, WERE LINEARLY SWEEPED FROM -6 V TO +6 V IN 5.2 SEC. THIS SWEEP VOLTAGE WAS MODULATED BY A LOW-LEVEL SINE WAVE SIGNAL OF 6.0 KHZ. THE TWO PROBES, HOWEVER, WERE KEPT AT SLIGHTLY DIFFERENT POTENTIALS WITH RESPECT TO THE SPACECRAFT. THE DIFFERENTIAL CURRENTS TO EACH PROBE WERE COMPARED AND AUTOMATICALLY KEPT IN A FIXED RATIO BY ADJUSTMENT OF THE VOLTAGE DIFFERENCE BETWEEN THE TWO PROBES. UNDER THESE CONDITIONS, THE ELECTRON TEMPERATURE WAS A FUNCTION OF THIS KNOWN RATIO AND THE VALUE OF THE VOLTAGE DIFFERENCE AS THE PROBES WERE SWEEPED THROUGH THE RETARDING REGION. (THE RETARDING REGION IS THAT VOLTAGE INTERVAL JUST BELOW SPACE POTENTIAL DURING WHICH THE CURRENT INCREASES FROM ALMOST ZERO TO JUST BELOW THE VALUE THAT WOULD BE CAUSED BY AMBIENT CONDITIONS.) THE INSTRUMENT WAS OPERATED FOR 5.2 SEC AND THEN TURNED OFF FOR THE SAME AMOUNT OF TIME WHILE THE ELECTRON DENSITY EXPERIMENT WAS TURNED ON. THE EXPERIMENT OPERATED NORMALLY, AND USEFUL DATA WERE OBTAINED. A MORE DETAILED EXPLANATION OF THE EXPERIMENT CAN BE FOUND IN THE RADIO AND ELECTRONIC ENGINEER, VOL. 35, NO. 1, 55-63, JANUARY 1968.

DATA SET NAME- ELECTRON TEMPERATURE VALUES ON MAGNETIC TAPE

NSSDC ID 67-042A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 04/14/68

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET IS CONTAINED ON TWENTY-FOUR 7-TRACK, EVEN PARITY, BCD MAGNETIC TAPES RECORDED AT 556 BPI. THE ELECTRON TEMPERATURE VALUES ARE EXPRESSED IN DEGREES KELVIN. THERE IS NORMALLY A FIXED TIME INTERVAL OF 27.92 SEC BETWEEN RECORDS. ON 22 OF THESE TAPES, IN ADDITION TO ELECTRON TEMPERATURES, EACH RECORD CONTAINS THUNDERSTORM NOISE DATA (DATA SET 67-042A-04A) AND ELECTRON DENSITY DATA (DATA SET 67-042A-06A). INFORMATION GIVEN AT THE BEGINNING OF EACH FILE CONSISTS OF DAY NUMBER (JANUARY 1, 1967, IS DAY NUMBER 1), APPROXIMATE UNIVERSAL TIME IN WHOLE HOURS, TELEMETRY STATION NAME, AND AN ERROR CODE. ADDITIONAL INFORMATION IN EACH RECORD CONSISTS OF LOCAL AND UNIVERSAL TIME, LATITUDE AND LONGITUDE (IN DEG), HEIGHT OF THE SATELLITE (IN KM), GYROFREQUENCY (IN MHZ), CRITICAL FREQUENCY F<sub>2</sub> (IN MHZ), AND HEIGHT OF THE F<sub>2</sub> MAXIMUM LAYER (IN KM). THESE LAST TWO PARAMETERS WERE OBTAINED FROM ITSA IONOSPHERIC PREDICTION MAPS. THE REMAINING TWO TAPES CONTAIN ONLY ELECTRON TEMPERATURE DATA PLUS SUPPORTING INFORMATION SUCH AS UNIVERSAL TIME AND LATITUDE AND LONGITUDE.

DATA SET NAME- ELECTRON TEMPERATURE PLOTS ON MICROFILM

NSSDC ID 67-042A-018

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 04/14/68

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF PLOTS OF ELECTRON TEMPERATURE IN DEGREES KELVIN VS LATITUDE AND TIME. THIS IS A GRAPHICAL VERSION OF THE DATA THAT ARE ON MAGNETIC TAPE (DATA SET 67-042A-01A). THE ENTIRE DATA SET IS CONTAINED ON 11 REELS OF 35-MM MICROFILM, TOGETHER WITH THE ELECTRON DENSITY EXPERIMENT DATA (DATA SET 67-042A-06B) AND THE THUNDERSTORM NOISE EXPERIMENT DATA (DATA SET 67-042A-04B). THERE ARE USUALLY FIVE FRAMES OF DATA FOR EACH PASS. THE TITLE FOR EACH FRAME GIVES TELEMETRY STATION NAME, APPROXIMATE UT IN WHOLE HOURS, SATELLITE ORBIT NUMBER, DAY NUMBER (JANUARY 1, 1967, IS DAY NUMBER 1), RIGHT ASCENSION AND DECLINATION OF THE SATELLITE SPIN AXIS, CORRECTED ZURICH SUNSPOT NUMBER, AND KP INDEX. THE FIRST TWO FRAMES (AND THE FOURTH, WHICH IS A CONTINUATION OF THE SECOND) CONTAIN THUNDERSTORM NOISE DATA. THE THIRD FRAME (AND THE FIFTH, WHICH IS A CONTINUATION OF THE THIRD) CONTAINS THE ELECTRON TEMPERATURE AND DENSITY DATA. ADDITIONAL DATA ON THESE FRAMES INCLUDE PLOTS OF SATELLITE HEIGHT (IN KM) VS LATITUDE AND TIME, CRITICAL FREQUENCY F<sub>2</sub> (IN MHZ), AND HEIGHT OF THE F<sub>2</sub> MAXIMUM LAYER (IN KM). THESE LAST TWO PARAMETERS WERE OBTAINED FROM ITS A IONOSPHERIC PREDICTION MAPS.

EXPERIMENT NAME- TERRESTRIAL RADIO (THUNDERSTORM) NOISE

NSSDC ID 67-042A-04

ORIGINAL EXPERIMENT INSTITUTION- RSRs

INVESTIGATORS- J.A. MURPHY, RSRs, SLOUGH BUCKS, ENGLAND

DATE LAST USEFUL DATA RECORDED- 08/00/69

EXPERIMENT BRIEF DESCRIPTION

THE TERRESTRIAL RADIO NOISE EXPERIMENT WAS DESIGNED TO MEASURE THE FLUX OF RADIO FREQUENCY ENERGY, AT SATELLITE ALTITUDE, FROM THUNDERSTORMS AND OTHER NATURAL TERRESTRIAL SOURCES AT SIX SELECTED FREQUENCIES. THE EXPERIMENT INCORPORATED THREE PAIRS OF CRYSTAL CONTROLLED HIGH-FREQUENCY RECEIVERS THAT OPERATED AT 4.998 AND 5.002 MHZ, 9.998 AND 10.002 MHZ, AND 14.996 AND 15.004 MHZ. EACH RECEIVER HAD A BANDWIDTH OF 1580 HZ AND MEASURED THE AVERAGE VOLTAGE OF THE TERRESTRIAL RADIO NOISE GENERATED. THE RECEIVERS ALSO MEASURED, UP TO A SPECIFIED MAXIMUM RATE, THE NUMBER OF LIGHTNING DISCHARGES RECEIVED. AN ONBOARD TAPE RECORDER STORED THE OUTPUTS FROM THE EXPERIMENT EVERY 28 SEC THROUGHOUT AN ORBIT. THE MOST USEFUL INFORMATION WAS OBTAINED AT THE FREQUENCY THAT WAS JUST GREATER THAN THE IONOSPHERIC CRITICAL FREQUENCY AT THAT TIME. AT LOWER FREQUENCIES, THE RADIO NOISE DID NOT PENETRATE THE IONOSPHERE, AND AT MUCH HIGHER FREQUENCIES, THE RADIO NOISE WAS RECEIVED FROM TOO LARGE AN AREA. THE EXPERIMENT WAS SUPPORTED BY

GROUND OBSERVATIONS FROM WHICH THUNDERSTORMS WERE PLOTTED BY A DIRECTION FINDING NETWORK IN EUROPE. THE EXPERIMENT FUNCTIONED SATISFACTORILY FROM LAUNCH UNTIL IT WAS PROGRAMMED OFF IN AUGUST 1969. FOR A MORE COMPLETE DESCRIPTION OF THE EXPERIMENT, SEE 'RECEPTION IN SPACE OF H. F. NOISE FROM THUNDERSTORMS,' BY F. HORNER AND R. B. BENT, IN ARIEL III SYMPOSIUM (HELD MAY 22 AND 23, 1968, GODDARD SPACE FLIGHT CENTER, GREENBELT, MARYLAND).

DATA SET NAME- PLOTS OF THUNDERSTORM NOISE VS LATITUDE  
ON TAPE

NSSDC ID 67-042A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 04/14/68

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET, GENERATED AT THE RADIO AND SPACE RESEARCH STATION, SLOUGH, ENGLAND, IS CONTAINED ON FIFTY-THREE 7-TRACK, EVEN PARITY, ECD MAGNETIC TAPES RECORDED AT 556 BPI. THERE IS NORMALLY A FIXED TIME INTERVAL OF 27.92 SEC BETWEEN RECORDS. INFORMATION GIVEN AT THE BEGINNING OF EACH FILE CONSISTS OF DAY NUMBER (JANUARY 1, 1967, IS DAY NUMBER 1), APPROXIMATE GMT IN WHOLE HOURS, TELEMETRY STATION NAME, AND AN ERROR CODE. THUNDERSTORM NOISE DATA CONSIST OF AVERAGE NOISE INTENSITY (IN DB ABOVE 1 MICROVOLT/M) AND PULSE COUNTS PER SECOND FOR THE THREE PAIRS OF RECEIVERS. THE RECEIVER FREQUENCIES WERE 15.004 AND 14.996, 10.002 AND 9.998, AND 5.002 AND 4.998 MHZ. SUPPLEMENTARY INFORMATION INCLUDES RADIUS OF OBSERVATION (IN KM) AT 5, 10, AND 15 MHZ AND IONOSPHERIC ATTENUATION (IN DB) OF 5-, 10-, AND 15-MHZ RECEPTION. ALSO INCLUDED IN EACH RECORD ARE LOCAL AND UNIVERSAL TIME, LATITUDE AND LONGITUDE (IN DEG), SATELLITE HEIGHT (IN KM), PLASMA FREQUENCY (IN MHZ) (DATA SET 67-042A-04A), ELECTRON TEMPERATURE (IN DEG K) (DATA SET 67-042A-01A), GYROFREQUENCY (IN MHZ), CRITICAL FREQUENCY F<sub>2</sub> (IN MHZ), AND HEIGHT OF THE F<sub>2</sub> MAXIMUM LAYER (IN KM). THESE LAST TWO IONOSPHERIC PARAMETERS WERE OBTAINED FROM ITSA IONOSPHERIC PREDICTION MAPS.

DATA SET NAME- PLOTS OF THUNDERSTORM NOISE VS LATITUDE  
ON MICROFILM

NSSDC ID 67-042A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 04/14/68

DATA SET BRIEF DESCRIPTION

THESE TERRESTRIAL RADIO (THUNDERSTORM) NOISE DATA ARE A GRAPHICAL VERSION OF THE DATA THAT ARE ON MAGNETIC TAPE (67-042A-04A). THE DATA SET IS CONTAINED ON 11 REELS OF 35-MM MICROFILM. THERE ARE USUALLY FIVE FRAMES OF DATA FOR EACH REVOLUTION OF THE SATELLITE. THE TITLE FOR EACH FRAME GIVES TELEMETRY STATION NAME, APPROXIMATE UT IN WHOLE HOURS, SATELLITE PASS NUMBER, DAY NUMBER (JANUARY 1, 1967, IS DAY NUMBER 1), RIGHT ASCENSION AND DECLINATION OF THE SATELLITE SPIN AXIS, CORRECTED ZURICH SUNSPOT NUMBER, AND KP INDEX. THE FIRST FRAME SHOWS A GLOBAL MAP WITH THE SATELLITE PATH SUPERIMPOSED. ALSO SHOWN ON THIS MAP ARE THE LIMITS OF RADIO VISIBILITY FOR



THE SIX FREQUENCIES OF INTEREST AND THE AREA OF THE EARTH IN DARKNESS. THE SECOND FRAME (AND THE FOURTH, WHICH IS A CONTINUATION OF THE SECOND) SHOWS PLOTS OF MEASURED RADIO NOISE INTENSITY (IN DB) VS LATITUDE AND TIME FOR EACH PAIR OF RECEIVERS IN THE FREQUENCY BANDS AT 15, 10, AND 5 MHZ AND PLOTS OF PULSE COUNTS PER SECOND FROM EACH PAIR OF RECEIVERS. THE RECEIVER FREQUENCIES WERE 15.004 AND 14.996 MHZ, 10.002 AND 9.998 MHZ, AND 5.002 AND 4.998 MHZ. THE THIRD FRAME (AND THE FIFTH, WHICH IS A CONTINUATION OF THE THIRD) CONTAINS PLOTS OF PLASMA FREQUENCY (IN MHZ) (67-042A-06B), ELECTRON TEMPERATURE (IN DEG K) (67-042A-01B), SATELLITE HEIGHT (IN KM), RADIUS OF RADIO VISIBILITY (IN KM), ABSORPTION (IN DB), CRITICAL FREQUENCY F<sub>2</sub> (IN MHZ), AND HEIGHT OF THE F<sub>2</sub> MAXIMUM LAYER (IN KM). THESE LAST TWO IONOSPHERIC PARAMETERS WERE OBTAINED FROM ITSA IONOSPHERIC PREDICTION MAPS.

EXPERIMENT NAME- VLF RECEIVER, FIXED FREQUENCY SIGNAL  
STRENGTH

NSSDC ID 67-042A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF SHEFFIELD

INVESTIGATORS- T.R. KAISER, U OF SHEFFIELD, SHEFFIELD, ENGLAND  
A.R.W. HUGHES, U OF SHEFFIELD, SHEFFIELD, ENGLAND  
K. BULLOUGH, U OF SHEFFIELD, SHEFFIELD, ENGLAND

DATE LAST USEFUL DATA RECORDED- 09/00/69

EXPERIMENT BRIEF DESCRIPTION.

THE PURPOSE OF THIS EXPERIMENT WAS TO MAKE A WORLDWIDE SURVEY OF CERTAIN VLF SIGNALS AND TO STUDY THE EFFECTS OF THE PROPAGATION PATH ON A 16-KHZ SIGNAL GROUND-BASED VLF TRANSMITTER. THE EXPERIMENT CONSISTED OF A FIXED FREQUENCY VLF RECEIVER OPERATING ON FREQUENCIES OF 3.2, 9.6, AND 16 MHZ. BANDWIDTHS WERE 1 KHZ ON ALL FREQUENCIES WITH AN ADDITIONAL NARROW BAND OF 0.1 KHZ AT 16 MHZ. THE OBSERVED PARAMETERS WERE MINIMUM, MEAN, AND MAXIMUM SIGNAL STRENGTHS AT EACH FREQUENCY, EXCEPT FOR THE NARROW-BAND 16-MHZ CHANNEL WHICH OBSERVED MINIMUM SIGNAL STRENGTH ONLY. TIME CONSTANTS WERE 30 SEC FOR THE MEAN VALUES, 1 SEC FOR THE NARROW-BAND MINIMUM, 0.1 SEC FOR THE OTHER THREE MINIMUM READINGS, AND 0.01 SEC FOR THE THREE MAXIMUM READINGS. IMPULSIVE NOISE PRODUCED LARGE VARIATIONS IN MINIMUM, MAXIMUM, AND MEAN READINGS IN CONTRAST TO SMALL VARIATIONS FOR CONTINUOUS SIGNALS. THESE SIGNAL STRENGTH OBSERVATIONS WERE RECORDED EACH 28 SEC AT ABOUT 2-DEG INTERVALS ALONG THE ORBITAL PATH AND READ OUT ON COMMAND EACH ORBIT. THE EXPERIMENT OPERATED NORMALLY AFTER LAUNCH AND WAS OPERABLE UNTIL SATELLITE REENTRY IN DECEMBER 1970. A MORE EXTENSIVE DESCRIPTION OF THIS EXPERIMENT WAS WRITTEN BY K. BULLOUGH ET AL. IN THE JOURNAL OF SCIENTIFIC INSTRUMENTS, 1, 77-85, 1968.

DATA SET NAME- MINIMUM, MAXIMUM, AND MEAN VLF SIGNAL  
STRENGTH VALUES ON MICROFILM

NSSDC ID 67-042A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 09/30/67

**CATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF FOUR 100-FT REELS OF 35-MM MICROFILM PREPARED BY THE EXPERIMENTERS AND IS AN ORIGINAL FORM OF THE DATA. ONE SET OF SIX FRAMES CONTAINS DATA FOR UP TO 90 MIN OF SATELLITE OPERATION. THE FIRST FOUR FRAMES CONSIST OF GRAPHS, ONE EACH FOR DATA FROM EACH OF THE THREE FIXED-RECEIVER FREQUENCIES AND A SECOND GRAPH FOR THE 16-KHZ RECEIVER. ON THE LATTER GRAPH, THE SIGNAL STRENGTHS OF THE NARROW-BAND AND WIDE-BAND SIGNALS ARE PLOTTED. ON THE OTHER THREE GRAPHS, MINIMUM, MEAN, AND MAXIMUM SIGNAL STRENGTHS ARE PLOTTED IN DECIBELS ABOVE 1 MICROGAMMA VS TIME AFTER START TIME. VALUES OF INVARIANT LATITUDE, GEOGRAPHIC POSITION, LOCAL TIME, MAGNETIC LATITUDE, AND SOLAR ZENITH ANGLE, WHICH CORRESPOND TO THE TIME AFTER START TIME, ARE SHOWN BELOW THE GRAPH. THE FIFTH FRAME CONTAINS REFERENCE VALUES FOR ALL OBSERVATION TIMES OF MAGNETIC FIELD STRENGTH, OF THE 16-KHZ REFERENCE INDEX, AND OF THE GEOCENTRIC ALTITUDE OF THE SATELLITE. THE LAST FRAME IS A MAP OF THE SUBSATELLITE TRACK WITH APPROPRIATE TIME TICKS ALONG THE PLOTTED PATH.

DATA SET NAME- MINIMUM, MAXIMUM, AND MEAN VLF SIGNAL  
STRENGTH VALUES ON TAPE

NSSDC ID 67-042A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 10/11/67

**CATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF FIFTEEN IBM TAPES PREPARED BY THE EXPERIMENTERS AND IS AN ORIGINAL FORM OF THE DATA. TWO DIFFERENT TYPES OF INFORMATION APPEAR ON THE TAPES. AT THE BEGINNING OF EACH TAPE IS AN INDEX OF THE DATA THAT INCLUDES A HEADER LABEL. FOLLOWING THE INDEX INFORMATION ARE THE DATA RECORDS. WITHIN THESE DATA RECORDS, EACH DUMP OF DATA FROM THE SATELLITE TAPE RECORDER IS PRECEDED BY A HEADER LABEL. PRIMARY DATA GIVEN ARE MAXIMUM, MEAN, AND MINIMUM SIGNAL STRENGTHS FOR EACH OF THREE FREQUENCIES AND MINIMUM SIGNAL STRENGTH FOR THE 16-KHZ NARROW-BAND RECEIVER. AUXILIARY DATA INCLUDED ARE UT, LOCAL TIME, GEOGRAPHIC AND GEOMAGNETIC LOCATION, INVARIANT LATITUDE, GEOMAGNETIC FIELD STRENGTH, GEOCENTRIC DISTANCE, SOLAR ZENITH ANGLE, AND AMBIENT ELECTRON DENSITY. THE TAPES ARE 7-TRACK, BCD, EVEN PARITY, WRITTEN AT 556 BPI.

EXPERIMENT NAME- RADIO FREQUENCY CAPACITANCE PROBE

NSSDC ID 67-042A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF BIRMINGHAM

INVESTIGATORS- J. SAYERS, U OF BIRMINGHAM, BIRMINGHAM, ENGLAND

DATE LAST USEFUL DATA RECORDED- 09/01/69

**EXPERIMENT BRIEF DESCRIPTION**

ELECTRON DENSITY DETERMINATIONS WERE MADE BY MEASURING THE PERMITTIVITY

ACROSS A PARALLEL-PLATE CAPACITOR. THE CAPACITOR, COMPOSED OF TWO CIRCULAR GRIDS 7.6 CM IN DIAMETER AND 5.7 CM APART, WAS OPERATED AT 29 MHZ. THE ELECTRON DENSITY COULD BE OBTAINED FROM THE OBSERVED PERMITTIVITY WHEN THESE GRIDS WERE AT SPACE POTENTIAL. TO ENSURE THAT AT SOME TIME THE POTENTIAL ON THE GRIDS WOULD BE EQUIVALENT TO THE SPACE POTENTIAL, A LINEAR SWEEP VOLTAGE FROM -6 V TO +6 V WAS APPLIED TO THE SENSOR IN 5.2 SEC. THE PERMITTIVITY AT SPACE POTENTIAL, WHEN THE AREA BETWEEN THE GRIDS WAS FILLED WITH AMBIENT ELECTRONS, WAS MEASURED IN TERMS OF THE CURRENT FLOWING BETWEEN THE TWO ELECTRODES. THE EXPERIMENT WAS OPERATED FOR 5.2 SEC AND THEN TURNED OFF FOR THE SAME AMOUNT OF TIME WHILE THE ELECTRON TEMPERATURE EXPERIMENT WAS TURNED ON. THERE WERE TWO OUTPUTS, ONE LOW SPEED TO A TAPE RECORDER AND THE OTHER HIGH SPEED REAL TIME, AVAILABLE ONLY WITHIN RANGE OF A TELEMETRY STATION. ONLY THE MAXIMUM VALUES OF EACH SWEEP WERE TAPE RECORDED WHILE THE ENTIRE SWEEP COULD BE READ OUT IN REAL TIME. THE EXPERIMENT OPERATED NORMALLY, AND USEFUL DATA WERE OBTAINED. A MORE DETAILED EXPLANATION OF THE EXPERIMENT CAN BE FOUND IN THE RADIO AND ELECTRONIC ENGINEER, VOL. 35, NO. 1, 55-63, JANUARY 1968.

DATA SET NAME- PLASMA FREQUENCY VALUES ON MAGNETIC TAPE NSSDC ID 67-042A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 04/14/68

#### DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET IS CONTAINED ON FIFTY-THREE 7-TRACK, 556-BPI, EVEN PARITY, BCD MAGNETIC TAPES GENERATED AT THE RADIC AND SPACE RESEARCH STATION, SLOUGH, ENGLAND. THERE IS NORMALLY A FIXED TIME INTERVAL OF 27.92 SEC BETWEEN RECORDS. THE ELECTRON DENSITY DATA ARE EXPRESSED IN EACH RECORD IN TERMS OF PLASMA FREQUENCY VALUES (IN MHZ). THE ELECTRON DENSITY CAN BE EASILY COMPUTED FROM THE PLASMA FREQUENCY. ALSO ON THESE TAPES ARE THE ELECTRON TEMPERATURE EXPERIMENT DATA (67-042A-01A) AND THE THUNDERSTORM NOISE EXPERIMENT DATA (67-042A-04A). INFORMATION GIVEN AT THE BEGINNING OF EACH FILE CONSISTS OF DAY NUMBER (JANUARY 1, 1967, IS DAY NUMBER 1), APPROXIMATE UNIVERSAL TIME IN WHOLE HOURS, TELEMETRY STATION NAME, AND AN ERROR CODE. ADDITIONAL DATA IN EACH RECORD ARE LOCAL AND UNIVERSAL TIME, LATITUDE AND LONGITUDE (IN DEG), HEIGHT OF THE SATELLITE (IN KM), GYROFREQUENCY (IN MHZ), CRITICAL FREQUENCY  $f_{x2}$  (IN MHZ), AND HEIGHT OF THE  $f_2$  MAXIMUM LAYER (IN KM). THESE LAST TWO PARAMETERS WERE OBTAINED FROM ITSA IONOSPHERIC PREDICTION MAPS.

DATA SET NAME- PLASMA FREQUENCY PLOTS ON MICROFILM NSSDC ID 67-042A-06B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/05/67 TO 04/14/68

#### DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF PLOTS OF PLASMA FREQUENCY (IN MHZ) VS

LATITUDE AND TIME. IT IS A GRAPHICAL VERSION OF THE DATA ON MAGNETIC TAPE (DATA SET 67-042A-06A). THE ELECTRON DENSITY CAN BE EASILY COMPUTED FROM THE PLASMA FREQUENCY. THE ENTIRE DATA SET IS CONTAINED ON 11 REELS OF 35-MM MICROFILM, TOGETHER WITH THE ELECTRON TEMPERATURE EXPERIMENT DATA (DATA SET 67-042A-018) AND THE THUNDERSTORM NOISE EXPERIMENT DATA (DATA SET 67-042A-048). THERE ARE USUALLY FIVE FRAMES OF DATA FOR EACH PASS. THE TITLE TO EACH FRAME GIVES TELEMETRY STATION NAME, APPROXIMATE UT IN WHOLE HOURS, SATELLITE ORBIT NUMBER, DAY NUMBER (JANUARY 1, 1967, IS DAY NUMBER 1), RIGHT ASCENSION AND DECLINATION OF THE SATELLITE SPIN AXIS, CORRECTED ZURICH SUNSPOT NUMBER, AND KP INDEX. THE FIRST TWO FRAMES (AND THE FOURTH, WHICH IS A CONTINUATION OF THE SECOND) CONTAIN THUNDERSTORM NOISE DATA. THE THIRD FRAME (AND THE FIFTH, WHICH IS A CONTINUATION OF THE THIRD) CONTAINS THE PLASMA FREQUENCY AND ELECTRON TEMPERATURE DATA. ADDITIONAL DATA ON THESE FRAMES INCLUDE PLOTS OF THE SATELLITE HEIGHT (IN KM) VS LATITUDE AND TIME, THE CRITICAL FREQUENCY F<sub>2</sub> (IN MHZ), AND THE HEIGHT OF THE F<sub>2</sub> MAXIMUM LAYER (IN KM). THESE LAST TWO PARAMETERS WERE OBTAINED FROM ITSA PREDICTION MAPS.

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SPACECRAFT NAME- EXPLORER 34 NSSDC ID 67-051A  
OTHER NAMES- IMP-F, IMP 4, 1967-051A

LAUNCH DATE- 05/24/67 DATE LAST SCIENTIFIC DATA RECORDED- 05/03/69

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 74.0 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 05/24/67 ORBIT PERIOD- 6225 MIN.  
APOGEE-211112. KM ALT PERIGEE- 278. KM ALT INCLINATION- 67.4 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS PLACED INTO A HIGH-INCLINATION, HIGHLY ECCENTRIC EARTH ORBIT. THE APOGEE POINT LAY NEAR THE ECLIPTIC PLANE AND HAD AN INITIAL LOCAL TIME OF ABOUT 1900 HR. THE SPACECRAFT WAS SPIN STABILIZED, AND IT HAD AN INITIAL SPIN PERIOD OF 2.6 SEC. THE SPIN VECTOR WAS APPROXIMATELY PERPENDICULAR TO THE ECLIPTIC PLANE. LIKE THE EARLIER IMP'S, THIS SPACECRAFT WAS INSTRUMENTED TO STUDY INTERPLANETARY MAGNETIC FIELDS, ENERGETIC PARTICLES, AND PLASMA. USEFUL DATA WERE ACQUIRED UNTIL JUST BEFORE SPACECRAFT REENTRY, WHICH OCCURRED ON MAY 3, 1969.

DATA SET NAME- SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC NSSDC ID 67-051A-000  
EPHEMERIS PLOTS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/24/67 TO 05/03/69

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILMED PLOTS OF EPHEMERIS

DATA FOR ALL THE ORBITS OF EXPLORER 34 IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES. THE X-Y, X-Z, AND Y-Z PROJECTIONS ARE AVAILABLE FOR BOTH COORDINATE SYSTEMS. THE X-Y SOLAR ECLIPTIC PROJECTION SHOWS THE COMPUTED AVERAGE POSITION OF THE BOW SHOCK AS COMPUTED BY DR. D. FAIRFIELD OF GSFC. TWO THREE-DIMENSIONAL PERSPECTIVES ARE ALSO AVAILABLE FOR EACH COORDINATE SYSTEM FOR EACH ORBIT. EVERY PLOT SHOWS ONE FULL ORBIT CURVE AND TABULAR LISTINGS OF THE ORBIT NUMBER, APOGEE, PERIGEE, START TIME, STOP TIME, COORDINATE SYSTEM, AND PROJECTION OF PERSPECTIVE FOR THE ORBIT. TIME TICK MARKS ON THE PLOTS ARE GIVEN AT 12-HR INTERVALS.

DATA SET NAME- SOLAR ECLIPTIC EPHEMERIS PLOTS

NSSDC ID 67-051A-00E

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 05/24/67 TO 03/06/69

DATA SET BRIEF DESCRIPTION

THE PUBLICATION, 'TRAJECTORIES OF EXPLORERS 33, 34, AND 35, JULY 1966 - APRIL 1969,' NASA-GSFC, X-692-70-64, FEBRUARY 1970, WRITTEN BY K. W. BEHANNON, K. H. SCHATTEN, D. H. FAIRFIELD, AND N. F. NESS, CONTAINS THE TRAJECTORIES OF EXPLORERS 33, 34, AND 35 FROM LAUNCH TO APRIL 1969 (EXCEPT FOR EXPLORER 34 FOR WHICH THERE ARE NO PLOTS AFTER MARCH 1969) AS PROJECTED INTO THE X-Y PLANE IN SOLAR ECLIPTIC COORDINATES. TICK MARKS 1 DAY APART ARE SHOWN FOR EXPLORERS 33 AND 35 AND, WHERE POSSIBLE, FOR EXPLORER 34. THIS PUBLICATION ALSO HAS THE X-Z SOLAR ECLIPTIC ORBIT PROJECTIONS OF THESE SATELLITES FOR JANUARY 1969 TO APRIL 1969. COMPUTED AVERAGE POSITIONS OF THE BOW SHOCK AND MAGNETOPAUSE ARE SHOWN.

EXPERIMENT NAME- LOW-ENERGY SOLID-STATE TELESCOPE

NSSDC ID 67-051A-01

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

INVESTIGATORS- W.L. BROWN, BELL TELEPHONE LAB , MURRAY HILL, N.J.  
L.J. LANZEROTTI, BELL TELEPHONE LAB , MURRAY HILL, N.J.

DATE LAST USEFUL DATA RECORDED- 05/03/69

EXPERIMENT BRIEF DESCRIPTION

A FOUR-ELEMENT SOLID-STATE TELESCOPE WITH AN ACCEPTANCE CONE HALF ANGLE OF 20 DEG WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS. DURING EACH 2.73-MIN INTERVAL, 9.62-SEC ACCUMULATIONS WERE OBTAINED IN EACH OF 16 DISTINCT COUNTING MODES. THESE MODES INVOLVED PROTONS IN FIVE ENERGY INTERVALS COVERING 0.6 TO 18 MEV, ALPHA PARTICLES IN FOUR INTERVALS COVERING 1.7 TO 80 MEV, AND ELECTRONS, DEUTERONS, TRITONS, AND HELIUM 3 NUCLEI IN THE INTERVALS 0.3 TO 3, 5 TO 20, 5.5 TO 25, AND 11 TO 72 MEV, RESPECTIVELY. ONBOARD CALIBRATION CHECKS WERE PERFORMED EVERY 6 HR. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH TO THE SPACECRAFT REENTRY DATE, MAY 3, 1969.

DATA SET NAME- REDUCED ELECTRON, PROTON, AND HEAVIER  
ION TELESCOPE DATA ON MAGNETIC TAPE

NSSDC ID 67-051A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/24/67 TO 05/03/69

#### DATA SET BRIEF DESCRIPTION

THESE REDUCED TIME-ORDERED DATA, WRITTEN AT BELL TELEPHONE LABORATORIES ON A GE/635, ARE AVAILABLE ON THIRTY-THREE 800-BPI, BINARY, 7-TRACK, MAGNETIC TAPES. EACH TAPE HAS ONE HEADER FILE, A FILE OF TELEMETRY AND ORBITAL INFORMATION, AND ONE TRAILER FILE. THE LOGICAL RECORDS IN THE MIDDLE ARE OF TWO TYPES. PACKED TELEMETRY RECORDS ARE 10 WORDS LONG, AND ORBITAL RECORDS ARE 20 WORDS LONG. ORBIT DATA ARE GIVEN IN 10-MIN INTERVALS EXCEPT FOR TIMES WHEN THE SATELLITE WAS LESS THAN 42,000-KM RADIAL DISTANCE FROM THE EARTH. AT THIS RANGE, THE ORBIT DATA ARE GIVEN FOR EVERY MINUTE. THE PARTICLE DATA ARE GIVEN FOR EACH MODE OF OPERATION OF THE EXPERIMENT AND ARE INCLUDED IN THE TELEMETRY FILE AS COUNTS IN A GIVEN REGISTER AS FUNCTIONS OF TIME. A DATA QUALITY INDICATOR IS INCLUDED TO FLAG BAD OR QUESTIONABLE DATA.

EXPERIMENT NAME- COSMIC-RAY PROTON (R VS DE/DX)

NSSDC ID 67-051A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- J.A. SIMPSON, U OF CHICAGO, CHICAGO, ILL.

DATE LAST USEFUL DATA RECORDED- 05/03/69

#### EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO MEASURE SEPARATELY THE CONTRIBUTIONS OF SOLAR NUCLEI AND OF GALACTIC NUCLEI ( $Z \leq 14$ ) USING A SOLID-STATE COSMIC-RAY TELESCOPE DESIGNED FOR ENERGY-LOSS VS RANGE OR TOTAL ENERGY MEASUREMENTS. THE PARTICLE ENERGY RANGE WAS PROPORTIONAL TO  $Z^2$  (FOR EXAMPLE, FOR PROTONS 0.6 TO 9.6 MEV, 9.6 TO 18.8 MEV, 29.5 TO 94.2 MEV, AND 94.2 TO 170 MEV AND ABOVE). THE DETECTOR VIEWING ANGLE WAS PERPENDICULAR TO THE SATELLITE SPIN AXIS. A SECOND, SMALLER, SOLID-STATE TELESCOPE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS WAS USED TO DETECT ELECTRONS IN THE RANGES 80 TO 130 KEV AND 175 TO 390 KEV. THE ELECTRON DETECTOR WAS DESIGNED TO PROVIDE INFORMATION CONCERNING THE SHAPE AND INTENSITY OF THE MAGNETOSPHERIC ELECTRON SPECTRA. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED FOUR TIMES EVERY 20.48 SEC. EACH ACCUMULATION WAS 4.8 SEC LONG (SPACECRAFT INITIAL SPIN PERIOD WAS ABOUT 2.6 SEC). THE OUTPUT FROM THREE 256-CHANNEL NUCLEAR PARTICLE TELESCOPE PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 5.12 SEC AND WAS TELEMETERED ALONG WITH THE DETECTOR ACCUMULATOR READINGS. EXCEPT FOR THE FAILURE OF THE ELECTRON DETECTOR 6 DAYS AFTER LAUNCH, THE EXPERIMENT PERFORMED NORMALLY UNTIL THE SATELLITE DECAYED ON MAY 3, 1969.

DATA SET NAME- TELESCOPE ACCUMULATOR READINGS ON  
MAGNETIC TAPE

NSSDC ID 67-051A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/24/67 TO 05/03/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ACCUMULATOR READINGS FOR EACH TELEMETERED FRAME (5.12 SEC) FOR ALL NONOVERLAPPED SEQUENCES (20.48 SEC) THAT CONTAIN AT LEAST ONE FRAME FOR WHICH DATA QUALITY IS CONSIDERED GOOD OR FAIR. THE DATA ARE CONTAINED ON SIX 7-TRACK BINARY MAGNETIC TAPES WRITTEN AT 800 BPI USING AN XDS930 COMPUTER. THE DATA ARE ORDERED BY SATELLITE ORBIT REVOLUTION NUMBER, WITH 30 FILES ON ALL TAPES EXCEPT THE LAST ONE, WHICH CONTAINS 14 FILES. EACH FILE ON THE TAPES CONTAINS ACCUMULATOR COUNT DATA FOR ONE ORBIT. THERE ARE A VARIABLE NUMBER OF PHYSICAL RECORDS (CONTAINING 816 BINARY WORDS EACH) PER FILE, AND THERE ARE EIGHT WORDS PER SEQUENCE AND 102 SEQUENCES (LOGICAL RECORDS) PER PHYSICAL RECORD. EACH SEQUENCE CONTAINS DETECTOR ACCUMULATOR COUNTS, DISTANCE OF SATELLITE FROM EARTH, SEQUENCE NUMBER, AND VARIOUS DATA QUALITY FLAGS.

DATA SET NAME- PULSE HEIGHT ANALYZER EVENT SUMMARIES ON  
MAGNETIC TAPE

NSSDC ID 67-051A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/24/67 TO 05/03/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA ON NINE 7-TRACK BINARY MAGNETIC TAPES WRITTEN AT 800 BPI USING AN XDS930 COMPUTER. THE DATA SET CONTAINS ALL NONOVERLAPPED, GOOD OR FAIR QUALITY, NONDUPLICATE PULSE HEIGHT ANALYSIS EVENTS FROM THE THREE 256-CHANNEL PULSE HEIGHT ANALYZERS. THE OUTPUT FROM THESE ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVENT EVERY 5.12 SEC. THE DATA ARE ORDERED BY SATELLITE ORBIT REVOLUTION NUMBER, WITH 20 FILES ON ALL TAPES EXCEPT FOR THE LAST ONE, WHICH HAS FOUR FILES. EACH FILE ON THE TAPE CONTAINS PULSE HEIGHT ANALYSIS DATA FOR ONE ORBIT. THERE ARE A VARIABLE NUMBER OF PHYSICAL RECORDS (EACH CONTAINING 600 BINARY WORDS) PER FILE. THERE ARE THREE BINARY WORDS PER EVENT AND 200 EVENTS (LOGICAL RECORDS) PER PHYSICAL RECORD. EACH LOGICAL RECORD CONTAINS THE PULSE HEIGHT ANALYSIS DATA FOR THE TELESCOPE COINCIDENCE COMBINATIONS CORRESPONDING TO PROTON ENERGIES OF 0.8 TO 9.6 MEV, 9.6 TO 18.8 MEV, AND 25.5 TO 94.2 MEV (D1 NOT D2 NOT D6, D1D2 NOT D3 NOT D6, AND D1D2D3D4 NOT D5 NOT D6). IN ADDITION, THE TAPES INCLUDE THE ORBIT NUMBER, RANGE IDENTIFICATION, SEQUENCE NUMBER (EACH SEQUENCE IS 20.48 SEC), AND DATA QUALITY FLAGS.

DATA SET NAME- FIVE-MIN AVERAGED COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 67-051A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/24/67 TO 05/03/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AVERAGED OVER 15 SEQUENCES (ABOUT 5 MIN) AND BASED ON GOOD NONOVERLAP DATA. THE DATA ARE CONTAINED ON TWO 7-TRACK BCD MAGNETIC TAPES WRITTEN AT 800 BPI USING AN XDS930 COMPUTER. THE DATA ARE ORDERED BY SATELLITE ORBIT REVOLUTION NUMBER WITH 133 FILES ON THE FIRST TAPE AND 64 FILES ON THE LAST TAPE. EACH FILE ON THE TAPE CONTAINS COUNTING RATE DATA FOR ONE ORBIT. THERE ARE A VARIABLE NUMBER OF PHYSICAL RECORDS (EACH CONTAINING FIFTY-SEVEN 33-WORD BCD LOGICAL RECORDS) PER FILE. EACH LOGICAL RECORD CONTAINS THE COUNTING RATES FOR THE COSMIC-RAY TELESCOPE COINCIDENCE COMBINATIONS THAT CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.8 TO 9.6 MEV, 9.6 TO 18.8 MEV, 29.5 TO 94.2 MEV, AND 94.2 TO 170 MEV (D1 NOT D2 NOT D6, D1D2 NOT D3 NOT D6, D1D2D3D4 NOT D5 NOT D6, AND D1D2D3D4D5 NOT D6). THE ELECTRON TELESCOPE COUNTING RATES FOR THE ENERGY INTERVAL 80 KEV TO 390 KEV ARE ALSO INCLUDED ALONG WITH TIME AND DISTANCE OF THE SATELLITE FROM THE EARTH.

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) ON  
MICROFILM

NSSDC ID 67-051A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/24/67 TO 04/25/69

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF MACHINE GENERATED COUNT RATE PLOTS ON ONE 35-MM REEL OF MICROFILM FOR THE TELESCOPE SENSOR COMBINATIONS WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.8 TO 9.6 MEV, 9.6 TO 18.8 MEV, 29.5 TO 94.2 MEV, AND 94.2 TO 170 MEV (D1 NOT D2 NOT D6, D1D2 NOT D3 NOT D6, D1D2D3D4 NOT D5 NOT D6, AND D1D2D3D4D5 NOT D6). THE 16 PLOTS COVER THE TIME INTERVAL FROM SOLAR ROTATION NUMBERS 1831 (MAY 24, 1967) THROUGH 1856 (APRIL 25, 1969). FIVE PLOTS FOR E1 ELECTRON TELESCOPE VALUES FOR SOLAR ROTATION NUMBERS 1831 TO 1835 (MAY 24, 1967, TO OCTOBER 6, 1967) AND FIVE FOR E2 VALUES FOR SOLAR ROTATION NUMBER 1831 (MAY 24, 1967, TO JUNE 20, 1967) ARE ALSO INCLUDED ON THE REEL. EACH PLOT GIVES THE COUNT RATE (LOGARITHMIC) VS TIME (DAY NUMBER) FOR ONE SOLAR ROTATION.

EXPERIMENT NAME- LOW-ENERGY PROTON AND ELECTRON  
DIFFERENTIAL ENERGY ANALYZER (LEPEDEA)

NSSDC ID 67-051A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA



INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA , IOWA CITY, IOWA  
L.A. FRANK, U OF IOWA , IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- 05/03/69

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO SEPARATELY MEASURE LOW-ENERGY ELECTRON AND PROTON INTENSITIES INSIDE THE MAGNETOSPHERE AND IN THE INTERPLANETARY REGION. THE DETECTOR SYSTEM CONSISTED OF A CURVED PLATE, CYLINDRICAL, ELECTROSTATIC ANALYZER (LEPEDEA - LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER) AND BENDIX CONTINUOUS CHANNEL MULTIPLIER (CHANNELTRON) ARRAY AND, IN ADDITION, AN ANTON 213 GM TUBE DESIGNED TO SURVEY THE INTENSITIES OF ELECTRONS WITH ENERGIES  $E > 40$  KEV IN THE OUTER MAGNETOSPHERE. THE ELECTROSTATIC ANALYZER WAS CAPABLE OF MEASURING THE ANGULAR DISTRIBUTIONS AND DIFFERENTIAL ENERGY SPECTRA OF PROTON (25 EV TO 47 KEV) AND ELECTRON (33 EV TO 57 KEV) INTENSITIES, SEPARATELY, WITHIN 15 CONTIGUOUS ENERGY INTERVALS. THE ANALYZER ACCUMULATORS WERE READ OUT FOUR TIMES EVERY 20.48 SEC. EACH ACCUMULATION WAS ABOUT 480 MSEC LONG (SPACECRAFT SPIN PERIOD WAS INITIALLY 2.6 SEC). A COMPLETE SCAN OF THE SPECTRUM FOR FOUR DIRECTIONS IN A PLANE PERPENDICULAR TO THE SPACECRAFT SPIN AXIS REQUIRED 307.2 SEC. FOR EACH ENERGY INTERVAL, THE DETECTOR RESPONSE FOR FOUR APPROXIMATELY 60-DEG SWATHS OF THE ANGULAR DISTRIBUTION WERE TELEMETERED. THE INSTRUMENTS PERFORMED NORMALLY FROM LAUNCH UNTIL THE SATELLITE DECAYED ON MAY 3, 1969.

DATA SET NAME- MOTION PICTURE SURVEY OF THE  
MAGNETOSPHERE

NSSDC ID 67-051A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/30/67 TO 07/04/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED DATA PROVIDED BY THE EXPERIMENTER ON ONE 400-FT REEL OF 16-MM MOVIE FILM. THE FILM CONTAINS A DISPLAY OF OBSERVATIONS OF LOW-ENERGY PROTON AND ELECTRON SPECTRA IN MAGNETOSPHERIC AND INTERPLANETARY REGIONS COMPRISING ABOUT 4-1/2 DAYS OF SUBSTANTIALLY CONTINUOUS SATELLITE OBSERVATIONS FROM 0520 UT ON JUNE 30, 1967, TO 1912 UT ON JULY 4, 1967. DURING THIS PERIOD, THE LOCAL TIME OF APOGEE WAS ABOUT 1700 HR. EACH MOVIE FRAME CONTAINS A GRAPH OF THE OBSERVED ENERGY SPECTRA (.03 TO 50 KEV) OF PROTONS AND ELECTRONS SEPARATELY FOR A GIVEN TIME AND POINT IN SPACE. A PICTORIAL REPRESENTATION OF THE SATELLITE'S POSITION WITH RESPECT TO THE SUN, EARTH, AND ITS MAGNETOSPHERE IS ALSO GIVEN ON EACH FRAME.

EXPERIMENT NAME- ELECTROSTATIC ANALYZER

NSSDC ID 67-051A-08

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- K.W. OGILVIE, NASA-GSFC , GREENBELT, MD.  
T.D. WILKERSON, U OF MARYLAND , COLLEGE PARK, MD.

DATE LAST USEFUL DATA RECORDED- 01/30/68

EXPERIMENT BRIEF DESCRIPTION

AN ELECTROSTATIC ANALYZER AND AN E CROSS E VELOCITY SELECTOR NORMAL TO THE SPACECRAFT SPIN AXIS WERE USED TO SEPARATELY DETERMINE PROTON AND ALPHA PARTICLE SPECTRA IN THE SOLAR WIND. FOR EACH SPECIES, MEASUREMENTS IN THE ENERGY PER CHARGE RANGE 310 TO 5100 EV WERE MADE AT 14 POINTS LOGARITHMICALLY EQUISPACED IN ENERGY. DURING INDIVIDUAL SPACECRAFT ROTATIONS, COUNTS WERE OBTAINED IN EACH OF SIXTEEN 22.5-DEG SECTORS FOR A GIVEN SPECIES AND ENERGY. THE SUM OF THESE COUNTS, THE SUM OF THE SQUARES OF THESE COUNTS, AND THE SECTOR NUMBER OF MAXIMUM COUNTING WERE TELEMETERED TO EARTH. AFTER SUCCESSIVE 61.44-SEC SPECTRAL DETERMINATIONS FOR PROTONS AND ALPHA PARTICLES, 15 CONSECUTIVE READINGS FOR PROTONS AT 1408 EV WERE OBTAINED. A PERIOD OF 3.07 MIN SEPARATED TWO SPECTRA OF THE SAME SPECIES. THE INSTRUMENT OPERATED NORMALLY UNTIL JANUARY 30, 1968. AT THAT TIME, IT WAS TURNED OPERATIONAL OFF SINCE IT WAS SPENDING ALL ITS TIME IN THE MAGNETOSPHERE. LATER, ATTEMPTS TO REACTIVATE THE SENSOR FAILED.

DATA SET NAME- REDUCED ENERGY SPECTRUM DATA WITH  
DERIVED PLASMA PARAMETERS ON MICROFILM

NSSDC ID 67-051A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 05/27/67 TO 01/30/68

DATA SET BRIEF DESCRIPTION

THIS EXPERIMENTER GENERATED DATA SET CONSISTS OF REDUCED VELOCITY STEP COUNTS (ENERGY SPECTRA), THE LOCATION NUMBER OF THE 22.5-DEG SECTOR WHERE MAXIMUM COUNTS WERE RECORDED, AN INDICATION OF THE AZIMUTHAL ANGULAR SPREAD IN THE INCOMING FLUX OF PARTICLES, THE DERIVED PLASMA FLUID PARAMETERS FOR EACH ENERGY SPECTRA, AND EPHEMERIS INFORMATION. THE THERMAL SPEED TO CONVECTION SPEED RATIO IS ALSO INCLUDED. THE DATA ARE CONTAINED ON FOUR REELS OF 35-MM MICROFILM AND ONE REEL OF 16-MM MICROFILM. DATA ARE GIVEN SEPARATELY FOR BOTH PROTONS AND ALPHA PARTICLES. THE TIME BETWEEN EACH SPECTRA IS 3 MIN, WITH THE TIME TO ACQUIRE ONE SPECTRA BEING 1 MIN. THE PLASMA PARAMETERS WERE DERIVED BY FITTING A SERIES OF CONVECTED MAXWELLIAN DISTRIBUTION FUNCTIONS TO THE VELOCITY STEP SPECTRUM, CONSIDERING THREE POINTS AT A TIME. THE RESULTING DISTRIBUTION FUNCTION WAS USED TO CALCULATE THE DENSITY, MEAN VELOCITY, AND TEMPERATURE BY THE METHOD OF MOMENTS. DATA ARE AVAILABLE WITH A 95 PERCENT COVERAGE FROM MAY 27, 1967, TO JANUARY 30, 1968.

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SPACECRAFT NAME- MARINER 5

NSSDC ID 67-060A

OTHER NAMES- VENUS, 1967-060A, MARINER VENUS '67

LAUNCH DATE- 06/14/67

DATE LAST SCIENTIFIC DATA RECORDED- 11/21/67

AGENCY- NASA-DSSA

SPACECRAFT WEIGHT IN ORBIT-

245 KG

ORBIT TYPE- HELIOCENTRIC

EPOCH- 06/14/67

ORBIT PERIOD- 292 DAYS

APOGEE- 1.0 AU RAD

PERIGEE- .72 AU RAD

INCLINATION- 0 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE MARINER 5 SPACECRAFT WAS THE FIFTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY, OR NON-LANDING, MODE. MARINER 5 WAS A REFURBISHED BACKUP SPACECRAFT FOR THE MARINER 4 MISSION AND WAS CONVERTED FROM A MARS MISSION TO A VENUS MISSION. THE SPACECRAFT WAS FULLY ATTITUDE STABILIZED, USING THE SUN AND THE STAR CANOPUS AS REFERENCES. A CENTRAL COMPUTER AND SEQUENCER SUBSYSTEM SUPPLIED TIMING SEQUENCES AND COMPUTING SERVICES FOR OTHER SPACECRAFT SUBSYSTEMS. THE SPACECRAFT PASSED 4000 KM FROM VENUS ON NOVEMBER 21, 1967. THE SPACECRAFT INSTRUMENTS MEASURED BOTH INTERPLANETARY AND VENUSIAN MAGNETIC FIELDS, CHARGED PARTICLES, AND PLASMAS, AS WELL AS THE RADIO REFRACTIVITY AND UV EMISSIONS OF THE VENUSIAN ATMOSPHERE. THE MISSION WAS TERMED A SUCCESS.

EXPERIMENT NAME- TWO-FREQUENCY BEACON RECEIVER

NSSDC ID 67-060A-02

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- V.R. ESHLEMAN, STANFORD U , PALO ALTO, CALIF.

T.A. CROFT, STANFORD U , PALO ALTO, CALIF.

DATE LAST USEFUL DATA RECORDED- 11/21/67

#### EXPERIMENT BRIEF DESCRIPTION

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED FROM A 4.6-M STEERABLE PARABOLIC ANTENNA AT STANFORD UNIVERSITY TO THE TWO-FREQUENCY RADIO RECEIVER ON THE SPACECRAFT. THE HIGH-FREQUENCY SIGNAL SERVED AS A REFERENCE SIGNAL SINCE ITS PROPAGATION TIME WAS NOT APPRECIABLY DELAYED. THE LOW-FREQUENCY SIGNAL WAS DELAYED IN PROPORTION TO THE TOTAL ELECTRON CONTENT IN THE PROPAGATION PATH. ON THE SPACECRAFT, A PHASE LOCKED RECEIVER COUNTED THE BEAT FREQUENCY ZERO CROSSINGS OF THE RECEIVED SIGNALS TO OBTAIN MEASUREMENTS OF PHASE-PATH DIFFERENCES. DIFFERENTIAL DELAY OF THE GROUP VELOCITY WAS ALSO OBSERVED, AND THESE VALUES WERE TELEMETERED TO THE GROUND STATION. FROM CALCULATED TOTAL ELECTRON CONTENT VALUES, THE IONOSPHERIC EFFECT (UP TO A SELECTED ALTITUDE OBTAINED FROM OTHER EXPERIMENTAL TECHNIQUES) WAS SUBTRACTED TO PRODUCE DATA DESCRIBING THE INTERPLANETARY ELECTRON CONTENT OF THE SOLAR WIND AND ITS VARIATIONS. THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH TO NOVEMBER 1967. FOR SIMILAR EXPERIMENTS COVERING OTHER TIME PERIODS, SEE 68-100A-03, 67-123A-03, 66-075A-04, AND 65-105A-04. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN J. GEOPHYS. RES., 71, 3325-3327, 1966, AND IN RADIO SCIENCE, VOL. 6, 55-63, 1971.

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON TAPE

NSSDC ID 67-060A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/14/67 TO 11/21/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE 556-BPI, 7-TRACK, BCD MAGNETIC TAPE GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE TAPE ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04A), 7 (66-075A-04A), 8 (67-123A-03A), AND 9 (68-100A-03A).

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON MICROFILM

NSSDC ID 67-060A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/14/67 TO 11/21/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED AND PLOTTED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM GENERATED AT NSSDC FROM DATA SUPPLIED BY THE EXPERIMENTER. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), AND 9 (68-100A-03B) AND SOLAR WIND ELECTRON DENSITY PLOTS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D).

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON TAPE

NSSDC ID 67-060A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 09/01/67 TO 10/26/67

DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE

EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF HOURLY VALUES OF NORMALIZED ELECTRON NUMBER DENSITY IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES, AND THE TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE THEN NORMALIZED TO 1 AU ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. VALUES RESULTING FROM INTERPOLATION ARE FLAGGED. NO INTERPOLATED VALUES WERE RECORDED WHEN DATA GAPS EXCEEDED 4 DAYS. THIS DATA SET IS ON ONE 800-BPI, 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN ON AN IBM 7094 COMPUTER. AUXILIARY DATA ON THE TAPE INCLUDE UT AND CARRINGTON ROTATION NUMBER. DATA ARE AVAILABLE FOR ABOUT 12 HR PER DAY WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. IDENTICAL DATA FOR OTHER TIME PERIODS FROM PICNEERS 6 (65-105A-04D), 7 (66-075A-04D), 8 (67-123A-03C), AND 9 (68-100A-03C) ALSO APPEAR ON THIS TAPE.

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SPACECRAFT NAME- EXPLORER 35 NSSDC ID 67-070A  
 OTHER NAMES- IMP-E, AIMP 2, 1967-070A  
 LAUNCH DATE- 07/19/67 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL  
 AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 67.4 KG  
 ORBIT TYPE- SELENOCENTRIC EPOCH- 07/22/67 ORBIT PERIOD- 691.8 MIN.  
 APOGEE- 9388 KM RAD PERIGEE- 2568 KM RAD INCLINATION- 176 DEGREES

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 35 WAS A SPIN-STABILIZED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY STUDIES AT LUNAR DISTANCES OF THE INTERPLANETARY PLASMA, MAGNETIC FIELD, ENERGETIC PARTICLES, AND SOLAR X RAYS. IT WAS LAUNCHED INTO AN ELLIPTICAL LUNAR ORBIT. THE SPIN AXIS DIRECTION WAS NEARLY PERPENDICULAR TO THE ECLIPTIC PLANE, AND THE SPIN RATE WAS 25.6 RPM. MISSION OBJECTIVES WERE ACHIEVED, AND THE SPACECRAFT WAS STILL OPERATIONAL IN MARCH 1971.

DATA SET NAME- SOLAR ECLIPTIC EPHEMERIS PLOTS NSSDC ID 67-070A-000  
 AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)  
 TIME SPAN OF DATA- 07/19/67 TO 05/01/69

DATA SET BRIEF DESCRIPTION

THE PUBLICATION, 'TRAJECTORIES OF EXPLORERS 33, 34, AND 35, JULY 1966 - APRIL 1969,' NASA-GSFC, X-692-70-64, FEBRUARY 1970, WRITTEN BY K. W. BEHANNON, K. H. SCHATTEN, D. H. FAIRFIELD, AND N. F. NESS, CONTAINS THE TRAJECTORIES OF EXPLORERS 33, 34, AND 35 FROM LAUNCH TO APRIL 1969 (EXCEPT FOR EXPLORER 34 FOR WHICH THERE ARE NO PLCTS AFTER MARCH 1969) AS PROJECTED INTO THE X-Y PLANE IN SOLAR ECLIPTIC COORDINATES. TICK MARKS 1 DAY APART

ARE SHOWN FOR EXPLORERS 33 AND 35 AND, WHERE POSSIBLE, FOR EXPLORER 34. THIS PUBLICATION ALSO HAS THE X-2 SOLAR ECLIPTIC ORBIT PROJECTIONS OF THESE SATELLITES FOR JANUARY 1969 TO APRIL 1969. COMPUTED AVERAGE POSITIONS OF THE BOW SHOCK AND MAGNETOPAUSE ARE SHOWN.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS TAPES

NSSDC ID 67-070A-00E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/01/68 TO (2/31/70

DATA SET BRIEF DESCRIPTION

THIS SET OF EPHEMERIS DATA IS CONTAINED ON SEVENTEEN 7-TRACK, 556-8PI, BCD, IBM 360 TAPES. EACH TAPE CONSISTS OF 1 MONTH OF DATA ON ONE FILE. THE DATA RECORDS ON THE TAPES ARE BLOCKED WITH FIVE LOGICAL RECORDS PER PHYSICAL RECORD, EACH LOGICAL RECORD CONTAINING 51 WORDS (204 CHARACTERS). EACH TAPE CONTAINS ONE HEADER RECORD. THIS IS A PHYSICAL RECORD THAT IS BLOCKED THE SAME AS THE DATA RECORDS. THE FOLLOWING INFORMATION IS CONTAINED ON THESE TAPES AT 5-MIN INTERVALS -- TIME, GEOCENTRIC SOLAR ECLIPTIC COORDINATES OF MOON AND SPACECRAFT, SOLAR MAGNETOSPHERIC COORDINATES OF MOON AND SPACECRAFT, SELENOCENTRIC SOLAR ECLIPTIC COORDINATES OF SPACECRAFT, AND GEOMAGNETIC LATITUDE AND LONGITUDE OF SPACECRAFT SUBSATELLITE POINT. EXCEPT FOR JANUARY THROUGH MARCH 1969 AND NOVEMBER 1969, TAPES COVERING THE TIME PERIOD INDICATED ARE AVAILABLE.

EXPERIMENT NAME- ELECTRON AND PROTON DETECTORS

NSSDC ID 67-070A-01

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

INVESTIGATORS- J.A. VAN ALLEN, U OF IOWA, IOWA CITY, IOWA

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THREE EON TYPE 6213 GEIGER-MUELLER TUBES (GM1, GM2, AND GM3) AND A SILICON SOLID-STATE DETECTOR PROVIDED MEASUREMENTS OF SOLAR X RAYS (GM1 ONLY, BETWEEN 2 AND 12 Å) AND CHARGED PARTICLES IN THE VICINITY OF THE MOON. GM1 AND GM3 MEASURED ELECTRONS OF ENERGIES 49 PLUS OR MINUS 1 KEV AND PROTONS OF ENERGIES 780 PLUS OR MINUS 40 KEV. GM2 WAS SHIELDED BY A CAP APPROXIMATELY 1 GRAM PER SQ CM THICK, LIMITING ITS RESPONSE TO PROTONS OF ENERGIES GREATER THAN ABOUT 30 MEV. THE SILICON DETECTOR OUTPUT WAS DISCRIMINATED AT FOUR THRESHOLDS -- (1) PN1, WHICH DETECTED PROTONS BETWEEN .32 AND 6.3 MEV, (2) PN2, WHICH DETECTED PROTONS BETWEEN .48 AND 3.0 MEV, (3) PN4, WHICH DETECTED ALPHAS BETWEEN 2 AND 10.2 MEV, AND (4) PN3, WHICH WAS SENSITIVE TO PARTICLES OF Z GREATER THAN 3, CARBON 12 BETWEEN .58 AND 9.5 MEV PER NUCLEON, NITROGEN 14 BETWEEN .514 AND 13.9 MEV PER NUCLEON, AND OXYGEN 16 BETWEEN .466 AND 18.8 MEV PER NUCLEON. GM1 AND THE SILICON DETECTOR WERE ORIENTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS, GM2 WAS

ORIENTED PARALLEL TO THE SPIN AXIS, AND GM3 WAS ORIENTED ANTIPARALLEL TO THE SPIN AXIS. DATA FROM GM1, PN1, AND PN4 WERE DIVIDED INTO DATA FROM QUADRANTS ORIENTED WITH RESPECT TO THE SUN (SECTORS I, II, III, AND IV WERE CENTERED 180, 270, 0, AND 90 DEG AWAY FROM THE SUN, RESPECTIVELY). DATA WERE READ OUT EVERY 82 OR 164 SEC, AND THE EXPERIMENT PERFORMANCE WAS NORMAL. SEE 'PARTICLE SHADOWING BY THE MOON,' BY J. A. VAN ALLEN AND N. F. NESS, J. GEOPHYS. RES., 74, 71-93, 1969, BUT NOTE THE REVISED SOLID-STATE DETECTOR ENERGY LEVELS.

DATA SET NAME- PLOTS OF 2- TO 12-A SOLAR SOFT X-RAY  
FLUX DATA ON MICROFILM

NSSDC ID 67-070A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/26/67 TO 05/27/70

## DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF PLOTS ON THREE REELS OF 35-MM MICROFILM OF THE X-RAY FLUX IN THE 2- TO 12-A RANGE. THESE ARE THE ANALYZED DATA AS RECEIVED FROM THE EXPERIMENTER. THE DATA SET IS COMPLETE, AND THE COVERAGE IS 75 PERCENT COMPLETE IF EVERY BREAK IN THE DATA STREAM LARGER THAN 5 MIN IS COUNTED. THESE PLOTS ARE DESCRIBED BY J. F. DRAKE, J. GIBSON, AND J. A. VAN ALLEN IN 'IOWA CATALOG OF SOLAR X-RAY FLUX,' IN SOLAR PHYSICS, VOL. 10, 433-459, 1969.

DATA SET NAME- 2- TO 12-A SOLAR SOFT X-RAY FLUX DATA ON  
TAPE

NSSDC ID 67-070A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/26/67 TO 05/28/70

## DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF FOUR BCD, 7-TRACK, 800-BPI MAGNETIC TAPES CONTAINING, IN ONE FILE, THE X-RAY FLUX IN THE 2- TO 12-A RANGE. THE ANALYZED DATA WERE SUBMITTED BY THE EXPERIMENTER. THE DATA SET IS COMPLETE, AND THE COVERAGE IS 75 PERCENT IF EVERY BREAK IN THE DATA STREAM LARGER THAN 5 MIN IS COUNTED.

DATA SET NAME- LISTINGS OF SOLAR SOFT X-RAY FLUX DATA  
ON MICROFILM

NSS DC ID 67-070A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/26/67 TO 05/28/69

## DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF LISTINGS ON NINE REELS OF 35-MM MICROFILM OF THE

SOLAR X-RAY FLUX IN THE 2- TO 12-A RANGE. THE DATA ARE ANALYZED DATA AND ARE SECOND GENERATION (I.E., REPROCESSED BY NSSDC). THIS DATA SET IS A REFORMATTED PRINTOUT OF DATA SET 67-070A-01B. THE DATA SET IS COMPLETE, AND THE COVERAGE, IF EVERY BREAK IN THE DATA STREAM LARGER THAN 5 MIN IS COUNTED, IS 75 PERCENT. THESE LISTINGS ARE DESCRIBED BY J. F. DRAKE, J. GIBSON, AND J. A. VAN ALLEN IN 'IOWA CATALOG OF SOLAR X-RAY FLUX,' IN SOLAR PHYSICS, VOL. 10, 433-459, 1969.

DATA SET NAME- SOLAR SOFT X-RAY BURST DATA ON TAPE

NSSDC ID 67-070A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/26/67 TO 08/13/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE BCD, 7-TRACK, 800-BPI MAGNETIC TAPE. THE TAPE HAS ONE FILE AND CONTAINS SOLAR X-RAY (2 TO 12 A) FLARE DATA AND PARAMETERS DESCRIBING THEM. INCLUDED ON THE TAPE FOR EACH FLARE ARE -- DATE, START TIME (GMT), TIME(S) OF PEAK(S) (GMT), END TIME (GMT), FLUX INCREASE ABOVE BACKGROUND (AT BURST MAXIMUM), RATIO OF TOTAL FLUX TO BACKGROUND (AT BURST MAXIMUM), INTEGRAL OF THE FLUX INCREASE ABOVE BACKGROUND FOR THE BURST DURATION, FLAGS INDICATING EITHER BREAKS IN THE DATA STREAM OR THE NUMBER OF PEAKS, AND THE RATIO OF THE TIME LOST DUE TO DATA GAPS TO THE TOTAL BURST TIME. THESE ARE ANALYZED DATA FROM THE EXPERIMENTER AND ARE COMPLETE. FURTHER INFORMATION ON THESE DATA IS AVAILABLE IN 'CHARACTERISTICS OF SOFT SOLAR X-RAY BURSTS,' BY J. F. DRAKE, IN SOLAR PHYSICS, VOL. 16, 152-185, 1971.

DATA SET NAME- LISTING OF SOLAR SOFT X-RAY BURST DATA  
ON MICROFILM

NSSDC ID 67-070A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/26/67 TO 08/13/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM CONTAINING A LISTING OF SOLAR X-RAY (2 TO 12 A) FLARES AND PARAMETERS DESCRIBING THEM. THE LIST INCLUDES, FOR EACH FLARE -- DATE, START TIME (GMT), TIME(S) OF PEAK(S) (GMT), END TIME (GMT), FLUX INCREASE ABOVE BACKGROUND (AT BURST MAXIMUM), RATIO OF TOTAL FLUX TO BACKGROUND (AT BURST MAXIMUM), INTEGRAL OF THE FLUX INCREASE ABOVE THE BACKGROUND FOR THE BURST DURATION, FLAGS INDICATING EITHER BREAKS IN THE DATA STREAM OR THE NUMBER OF PEAKS, AND THE RATIO OF TIME LOST DUE TO DATA GAPS TO THE TOTAL BURST TIME. THIS DATA SET IS A PRINTOUT OF DATA SET 67-070A-01D. DATA FROM EXPLORER 33 DATA SET 66-058A-05E ARE CONTAINED ON THE SAME REEL OF FILM. FURTHER INFORMATION ON THESE DATA IS CONTAINED IN 'CHARACTERISTICS OF SOFT SOLAR X-RAY BURSTS,' BY J. F. DRAKE, IN SOLAR PHYSICS, VOL. 16, 152-185, 1971.



DATA SET NAME- SOLAR SOFT X-RAY DATA COVERAGE ON  
MICROFILM

NSSDC ID 67-070A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/26/67 TO 09/18/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM CONTAINING GRAPHS THAT SHOW DATA COVERAGE. EACH GRAPH COVERS A 1-MONTH PERIOD, PLOTTING DAY VS HOUR (IN BLOCKS). DATA GAPS GREATER THAN 5 MIN ARE REPRESENTED BY DARK AREAS. THESE PLOTS ARE DESCRIBED BY J. F. DRAKE, J. GIBSON, AND J. A. VAN ALLEN IN 'IOWA CATALOG OF SOLAR X-RAY FLUX,' IN SOLAR PHYSICS, VOL. 10, 433-459, 1969.

DATA SET NAME- PLOTS OF PARTICLE COUNT RATE DATA ON  
MICROFILM

NSSDC ID 67-070A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/19/67 TO 12/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS A SERIES OF PLOTS CONTAINED ON 10 REELS OF 35-MM MICROFILM. THIS IS A COMPLETE SET OF PARTIALLY REDUCED DATA SUBMITTED BY THE EXPERIMENTER. THE COVERAGE IS GREATER THAN 90 PERCENT. SIX PLOTS ARE GIVEN FOR EACH 12-HR PERIOD (0000 TO 1200 OR 1200 TO 2400 GMT). THESE PLOTS CONTAIN, AS A FUNCTION OF TIME, (1) THE COUNT RATES OF GM1 FOR EACH SECTOR, (2) THE COUNT RATES OF PN1 FOR EACH SECTOR, (3) THE COUNT RATES OF GM2, GM3, PN2, AND GM1 (GM1 SUMMED OVER ALL SECTORS), (4) THE COUNT RATES OF PN1, PN2, AND PN4 OF THE SILICON SOLID-STATE DETECTOR (PN1 SUMMED OVER ALL SECTORS), (5) THE AVERAGE COUNTING RATE (G1AV) OF GM1 FOR SECTORS I, II, AND IV, THE COUNTING RATE OF GM1, SECTOR III, DUE TO SOLAR X RAYS (G1X), AND THE DIFFERENCE BETWEEN THE COUNT RATES OF GM3 AND GM2, AND (6) THE ANGULAR DISTRIBUTION DATA IN THE FORM OF THE RATIO OF THE COUNTING RATES OF GM2 TO GM3 AND THE COEFFICIENTS C AND D AS COMPUTED FROM A DISTRIBUTION OF THE FORM  $1 + C \cos(\text{PHI} + D)$ , WHERE PHI IS THE ROTATION ANGLE OF THE SPACECRAFT, FOR PN1 AND GM1.

EXPERIMENT NAME- AMES MAGNETIC FIELDS

NSSDC ID 67-070A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

INVESTIGATORS- C.P. SONETT, NASA-ARC, MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

THE AMES MAGNETOMETER EXPERIMENT CONSISTED OF A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER AND AN ELECTRONICS PACKAGE. THE SENSORS WERE ORTHOGONALLY MOUNTED, WITH ONE SENSOR ORIENTED ALONG THE SPIN AXIS OF THE SPACECRAFT. A MOTOR INTERCHANGED A SENSOR IN THE SPIN PLANE WITH THE SENSOR ALONG THE SPIN AXIS EVERY 24 HR, ALLOWING INFLIGHT CALIBRATION. THE INSTRUMENT PACKAGE INCLUDED A CIRCUIT FOR SPIN DEMODULATING THE OUTPUTS FROM THE SENSORS IN THE SPIN PLANE. THE NOISE THRESHOLD WAS LESS THAN 0.4 GAMMA. THE INSTRUMENT HAD THREE RANGES COVERING PLUS OR MINUS 20, 60, AND 200 GAMMAS FULL SCALE FOR EACH VECTOR COMPONENT. THE DIGITIZATION ACCURACY WAS 1 PERCENT OF THE ENTIRE RANGE COVERED FOR EACH RANGE. THE MAGNETIC FIELD VECTOR WAS MEASURED INSTANTANEOUSLY, AND THE INSTRUMENT RANGE WAS CHANGED AFTER EACH MEASUREMENT. A PERIOD OF 2.05 SEC ELAPSED BETWEEN ADJACENT MEASUREMENTS AND 6.14 SEC BETWEEN MEASUREMENTS USING THE SAME RANGE. THE INSTRUMENT PERFORMANCE HAS BEEN NORMAL AS OF JUNE 1971.

DATA SET NAME- AVERAGED MAGNETIC FIELD VECTOR PLOTS ON  
MICROFILM

NSSDC ID 67-070A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/19/67 TO 07/16/68

#### DATA SET BRIEF DESCRIPTION

THESE MAGNETIC FIELD VECTOR PLOTS ARE CONTAINED ON ONE REEL OF 16-MM MICROFILM. THIS REEL CONTAINS PLOTTED 81.8-SEC SCALAR AVERAGES OF THE MAGNITUDE OF B, ITS LATITUDE, AND LONGITUDE IN EITHER SOLAR MAGNETOSPHERIC OR SOLAR EQUATORIAL COORDINATES, ALONG WITH A MEASURE OF THE DEVIATION IN B. GENERALLY, DATA ARE PLOTTED IN SOLAR MAGNETOSPHERIC COORDINATES FOR TIMES WHEN THE SPACECRAFT WAS INSIDE THE MAGNETOSPHERE OR GEOMAGNETIC TAIL AND IN SOLAR EQUATORIAL COORDINATES WHEN THE SPACECRAFT WAS OUTSIDE THESE REGIONS. ABOUT 4 HR OF DATA ARE PLOTTED ON EACH FRAME. SEQUENCE NUMBER, TIME, AND THE COORDINATE SYSTEM USED ARE INDICATED ON EACH PLOT. DRIFTS IN ZERO LEVELS OF THE SENSORS HAVE BEEN CORRECTED BY THE EXPERIMENTER. DATA ARE AVAILABLE OVER THE TIME PERIOD SPECIFIED WITH A 95 PERCENT COVERAGE.

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SPACECRAFT NAME- OGO 4

NSSDC ID 67-073A

OTHER NAMES- OGO-D, POGO 2, 1967-073A

LAUNCH DATE- 07/28/67

DATE LAST SCIENTIFIC DATA RECORDED- 03/00/70

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT- 562.0 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 07/28/67

ORBIT PERIOD- 98 MIN.

APOGEE- 908. KM ALT

PERIGEE- 412. KM ALT

INCLINATION- 86.011 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

OGO 4 WAS A LARGE OBSERVATORY INSTRUMENTED WITH EXPERIMENTS DESIGNED TO

STUDY THE INTERRELATIONSHIPS BETWEEN THE AURORA AND AIRGLOW EMISSIONS, ENERGETIC PARTICLE ACTIVITY, GEOMAGNETIC FIELD VARIATION, IONOSPHERIC IONIZATION AND RECOMBINATION, AND ATMOSPHERIC HEATING WHICH TAKE PLACE DURING A PERIOD OF INCREASED SOLAR ACTIVITY. OGO 4 CONSISTED OF A MAIN BODY, GENERALLY PARALLELEPIPED IN FORM, TWO RECTANGULAR SOLAR PANELS EACH INCLUDING A SOLAR-ORIENTED EXPERIMENT PACKAGE (SCEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). THE MAIN BODY WAS ATTITUDE CONTROLLED BY USE OF HORIZON SCANNERS AND GAS JETS AND WAS DESIGNED TO BE POINTED TOWARD THE EARTH (+Z AXIS). THE AXIS CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS DESIGNED TO OSCILLATE SO AS TO REMAIN PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS, ACTIVATED BY SUN SENSORS, COULD ROTATE ABOUT THIS X AXIS IN ORDER TO OBTAIN MAXIMUM RADIATION FOR THE SOLAR CELLS AND, CONCURRENTLY, ORIENT THE SCEP PROPERLY. THE OPEP'S WERE MOUNTED ON EITHER END OF AN AXIS WHICH WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE FORWARD END OF THE MAIN BODY. THE OPEP SENSORS NORMALLY WERE MAINTAINED LOOKING FORWARD IN THE ORBITAL PLANE OF THE SATELLITE. IN ORDER TO MAINTAIN THIS ORIENTATION, THE OPEP AXIS COULD ROTATE OVER 90 DEG. AND, IN ADDITION, AN ANGULAR DIFFERENCE OF OVER 90 DEG WAS POSSIBLE BETWEEN THE ORIENTATION OF THE UPPER AND LOWER OPEP PACKAGES. THE SCEP CONTAINED FOUR EXPERIMENTS, AND THE OPEP CONTAINED FIVE EXPERIMENTS. AFTER THE SPACECRAFT ACHIEVED ORBIT AND THE EXPERIMENTS WERE DEPLOYED INTO AN OPERATING MODE, AN ATTITUDE CONTROL PROBLEM OCCURRED. THIS CONDITION WAS CORRECTED BY GROUND CONTROL PROCEDURES UNTIL COMPLETE FAILURE OF THE TAPE RECORDING SYSTEMS IN MID-JANUARY 1969. AT THAT TIME, DUE TO THE DIFFICULTY OF MAINTAINING ATTITUDE CONTROL WITHOUT THE TAPE RECORDERS, THE ATTITUDE CONTROL SYSTEM WAS COMMANDED OFF, AND THE SPACECRAFT PLACED INTO A SPIN-STABILIZED MODE ABOUT THE AXIS WHICH WAS PREVIOUSLY MAINTAINED VERTICALLY. IN THIS MODE, SEVEN OF THE REMAINING EXPERIMENTS WERE TURNED OFF SINCE NO MEANINGFUL DATA COULD BE OBSERVED BY THEM. IN MID-OCTOBER, 1969, THE SATELLITE WAS TURNED OFF. IT WAS REACTIVATED AGAIN IN JANUARY 1970 FOR 2 MONTHS IN ORDER TO OBTAIN VLF OBSERVATIONS.

EXPERIMENT NAME- GALACTIC AND SOLAR COSMIC RAY

NSSDC ID 67-073A-09

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- W.R. WEBBER, U OF NEW HAMPSHIRE, DURHAM, N.H.

DATE LAST USEFUL DATA RECORDED- 08/27/67

#### EXPERIMENT BRIEF DESCRIPTION

THIS COSMIC-RAY TELESCOPE EXPERIMENT WAS DESIGNED TO MEASURE THE DIFFERENTIAL ENERGY SPECTRA OF PROTONS, HELIUM NUCLEI, AND HEAVIER NUCLEI UP TO  $Z = 10$  WITHIN THE ENERGY RANGE OF 50 TO 2000 MEV PER NUCLEON AND AT A MAXIMUM SAMPLING RATE OF ONCE PER 288 MSEC. THE TELESCOPE CONSISTED OF TWO DETECTORS, A SCINTILLATOR WITH ITS ASSOCIATED PHOTOMULTIPLIER (PM) TUBE AND A SCINTILLATOR AND A CERENKOV ELEMENT SANDWICH WITH BOTH ELEMENTS OPTICALLY COUPLED TO THE SAME PM TUBE. A 70-NANOSSEC COINCIDENCE CIRCUIT COUPLED THE TWO DETECTORS TO FORM THE TELESCOPE. PULSES FROM EACH PM TUBE WERE PULSE HEIGHT ANALYZED. SAMPLED PULSE HEIGHTS, THE COINCIDENCE COUNT RATE, AND THE COUNT RATE OF THE FIRST DETECTOR WERE TELEMETERED. THE RESOLUTION OF THE OGO 4 DETECTOR DETERIORATED SHORTLY AFTER LAUNCH, PROBABLY DUE TO PARTIAL

SEPARATION OF AN OPTICAL INTERFACE IN ONE ELEMENT OF THE TELESCOPE. THIS RESULTED IN A REDUCED EFFICIENCY FOR DETECTING PROTONS GREATER THAN ABOUT 200 MEV, WITH THE WORST RESOLUTION NEAR THE CERENKOV THRESHOLD OF 320 MEV. APPROXIMATELY 28 DAYS OF DATA WERE OBTAINED.

DATA SET NAME- REDUCED COSMIC-RAY DATA ON TAPE

NSSDC ID 67-073A-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/30/67 TO 08/27/67

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA CONSIST OF TWO EXPERIMENTER GENERATED 7-TRACK, 556-BPI, BINARY MAGNETIC TAPES WRITTEN ON THE CDC 1604 COMPUTER. THE DATA ON THE TAPES ARE ORDERED BY ORBIT PASS, AS INDICATED BY THE MAXIMUM VALUE OF THE MCILWAIN L PARAMETER. THE DATA ON THE FIRST TAPE BEGIN ON JULY 30, 1967, AT 0204 UT AND END ON AUGUST 14, 1967, AT 0150 UT. THE DATA ON THE SECOND TAPE BEGIN ON AUGUST 14, 1967, AT 0150 UT AND END ON AUGUST 27, 1967, AT 0307 UT. THE DATA CONSIST OF 37-SEC AVERAGED TELESCOPE RATES AND 18-SEC AVERAGED SINGLES RATES. THE TAPES CONTAIN NINE-BIT WORD TELESCOPE RATES, NINE-BIT WORD SINGLES RATES, UT, ALTITUDE, LATITUDE, LONGITUDE, MCILWAIN L, AND MAGNETIC FIELD.

DATA SET NAME- PLOTS OF PARTICLE COUNT RATES ON  
MICROFILM

NSSDC ID 67-073A-09B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/30/67 TO 08/27/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM PROVIDED BY THE EXPERIMENTER. BOTH THE SINGLES COUNT RATES AND THE TELESCOPE RATES ARE PLOTTED ON THE SAME SCALE AS A FUNCTION OF TIME. (THE TELESCOPE RATES ARE SCALED BY A FACTOR OF 100.) THE VERTICAL SCALE ON THE PLOTS IS LOGARITHMIC COUNTS PER SECOND, AND THE HORIZONTAL SCALE IS LINEAR UT FOR ONE ORBIT PERIOD. IN ADDITION TO THE TIME SCALE, MCILWAIN L VALUES, ALTITUDE, AND LATITUDE ARE INDICATED. THE DATA PLOTTED ARE FOR THE SAME PERIOD COVERED BY THE COSMIC-RAY DATA TAPES IN DATA SET 67-073A-09A.

EXPERIMENT NAME- LYMAN-ALPHA AND UV AIRGLOW STUDY

NSSDC ID 67-073A-13

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

INVESTIGATORS- P.W. MANGE, NAVAL RESEARCH LAB , WASHINGTON, D.C.  
R.R. MEIER, NAVAL RESEARCH LAB , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 01/20/69

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE LYMAN-ALPHA NIGHT SKYGLOW RADIATION FROM EARTH (1050 TO 1350 Å), THE LYMAN-ALPHA BACKGROUND RADIATION FROM SPACE (1050 TO 1350 Å), AND THE FAR UV AIRGLOW RADIATION FROM EARTH (1230 TO 1350 Å AND 1350 TO 1550 Å) USING EIGHT DETECTORS. SEVEN OF THE DETECTORS WERE POINTED TOWARD THE EARTH TO MEASURE THE FAR UV AIRGLOW AND LYMAN-ALPHA NIGHT SKYGLOW, AND ONE WAS DIRECTED TOWARD SPACE TO MEASURE THE LYMAN-ALPHA BACKGROUND RADIATION. THE 1050- TO 1350-Å DETECTORS HAD LITHIUM FLUORIDE WINDOWS AND NITRIC OXIDE GAS FILLER, THE 1230- TO 1350-Å DETECTORS HAD CALCIUM FLUORIDE WINDOWS AND NITRIC OXIDE GAS FILLER, AND THE 1350- TO 1550-Å DETECTORS HAD BARIUM FLUORIDE WINDOWS AND UNSYMMETRICAL DIMETHYL HYDRAZINE GAS FILLER. THESE DETECTORS OBSERVED ZENITH AND NADIR INTENSITIES IN THE NIGHT SKY AT ALTITUDES OF 400 TO 900 KM. THE OUTPUT CONSISTED OF INTENSITIES TAKEN AT 2-MIN INTERVALS COVERING THE PERIOD JULY 29, 1967, TO JANUARY 20, 1969. THE SATELLITE TAPE RECORDER FAILED ON JANUARY 20, 1969, LIMITING THE DATA TO REAL TIME ONLY. PRIOR TO THIS EQUIPMENT FAILURE, THE RADIATION DETECTORS OPERATED WITH NEGLIGIBLE LOSS OF SENSITIVITY, WITH THE EXCEPTION OF THE 1230- TO 1350-Å DETECTORS WHICH, FOR AN UNKNOWN REASON, STEADILY DECREASED IN SENSITIVITY AND BECAME USELESS AFTER 6 WEEKS OF OPERATION. IN GENERAL, THE OPERATION OF THE INSTRUMENTATION WAS NOMINAL.

DATA SET NAME- AIRGLOW RADIATION INTENSITY PLOTS ON  
MICROFILM

NSSDC ID 67-073A-13A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/29/67 TO 02/12/68

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF MEASUREMENTS OF BACKGROUND LYMAN-ALPHA RADIATION FROM SPACE (1050 TO 1350 Å), LYMAN-ALPHA NIGHT SKYGLOW RADIATION FROM EARTH (1050 TO 1350 Å), AND FAR UV AIRGLOW RADIATION FROM EARTH (1230 TO 1350 Å AND 1350 TO 1550 Å), WHICH HAVE BEEN CONVERTED TO RADIATION INTENSITIES BY THE USE OF CALIBRATION OR CONVERSION FACTORS. THE 1230- TO 1350-Å RADIATION READINGS ARE QUESTIONABLE SINCE THE FAR UV DETECTORS LOST SENSITIVITY OVER A 6-WEEK PERIOD AND EVENTUALLY BECAME USELESS. THE DATA, WHICH ARE AVAILABLE ON TWO REELS OF 16-MM MICROFILM, CONSIST OF STRIP CHARTS IN ANALOG FORM OF TIME (UT) VS THE THREE RADIATION INTENSITIES (FAR UV, EARTH LYMAN-ALPHA, AND BACKGROUND SPACE LYMAN-ALPHA) IN UNITS OF KILORAYLEIGHS. THE TIME PERIOD COVERED PER PLOT OR CHART RANGES FROM 15 MIN TO NEARLY 2 HR, WITH THE MOST FREQUENT INTERVAL BEING ABOUT 90 MIN. CALIBRATION FACTORS ARE ALSO GIVEN (KILORAYLEIGHS/V), WHILE THE INTENSITIES PLOTTED ARE ACCURATE TO PLUS OR MINUS 0.2 KILORAYLEIGH. THE INTENSITY READINGS WERE TAKEN AT 2-MIN INTERVALS DURING THE PERIOD JULY 29, 1967, TO FEBRUARY 12, 1968. NO ORBITAL DATA ARE INCLUDED IN THIS DATA SET.

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SPACECRAFT NAME- LUNAR ORBITER 5  
OTHER NAMES- ORBITER V, 1967-075A, ORBITER-E  
NSSDC ID 67-075A  
LAUNCH DATE- 08/01/67 DATE LAST SCIENTIFIC DATA RECORDED- 01/31/68  
AGENCY- NASA SPACECRAFT WEIGHT IN ORBIT- 390 KG  
ORBIT TYPE- SELENOCENTRIC EPOCH- 08/09/67 ORBIT PERIOD- 192 MIN.  
APOGEE- 3238 KM RAD PERIGEE- 1838 KM RAD INCLINATION- 85 DEGREES

SPACECRAFT BRIEF DESCRIPTION

LUNAR ORBITER 5 WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR THE SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENODETECT, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISELUNAR TRAJECTORY AND INJECTED INTO THREE ELLIPTICAL LUNAR ORBITS (APOLUNES 7630, 7830, AND 3238 KM, PERILUNES 1938, 1838, AND 1838 KM) FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM, WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM AUGUST 6 TO 18, 1967, AND READOUT OCCURRED UNTIL AUGUST 27, 1967. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS USED FOR TRACKING PURPOSES UNTIL IT IMPACTED THE LUNAR SURFACE ON COMMAND AT 2.79 DEG S LATITUDE, 83 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES) ON JANUARY 31, 1968.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES NSSDC ID 67-075A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- L.J. KOSOFKY, NASA HEADQUARTERS, WASHINGTON, D.C.  
I.G. RECENT, NASA-LARC, HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 08/18/67

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND

PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS COULD BE OBTAINED. AT AN ALTITUDE OF 46 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON A 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. RESOLUTIONS WERE 1 AND 8 M, RESPECTIVELY. AT APOLONE, ON THE MOON'S FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMATEL PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEPED 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 213 SIMULTANEOUS EXPOSURES OBTAINED, ALL WERE READ OUT SATISFACTORILY. EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON AUGUST 27, 1967. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- AMS FRAMES HAND ASSEMBLED FROM ORIGINAL  
GRE FRAMELETS

NSSDC ID 67-075A-01

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/06/67 TO 08/18/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET IS ONE COMPLETE SET OF THIRD GENERATION 20- BY 24-IN. FILM SHEETS. THESE SHEETS WERE PREPARED BY THE ARMY MAP SERVICE (AMS) FROM A NEGATIVE COPY OF THE PRIME GRE RECORD MADE BY EASTMAN KODAK CO. A POSITIVE CONTACT PRINT WAS PREPARED, THEN CUT ALONG THE FIDUCIAL LINES TO SEPARATE INDIVIDUAL FRAMELETS. THESE FRAMELETS WERE MOUNTED ON A TRANSPARENT BACKING IN CORRECT SEQUENCE AND ORIENTATION, AND A FILM NEGATIVE WAS MADE BY CONTACT PRINTING. THE ACTUAL IMAGE MEASURES 15.5 BY 20 IN. FRAME IDENTIFICATION APPEARS ON EACH PRINT. ONE MR PHOTO APPEARS ON ONE FILM SHEET WHEREAS THREE FILM SHEET NEGATIVES ARE REQUIRED FOR ONE HR FRAME. THESE PHOTOGRAPHS HAVE LOST PHOTOMETRIC RELATIONSHIPS USEFUL IN SLOPE DETERMINATION BECAUSE OF THE DENSITY CONTROL TECHNIQUE UTILIZED IN PROCESSING. THIS TECHNIQUE ALSO CAUSED BRIGHT AREAS TO PRINT AS A GRAY TONE. HOWEVER, THE CONTROL TECHNIQUE DOES FACILITATE INTERPRETATION OF THE PHOTOGRAPHS.

DATA SET NAME- LARC HAND-ASSEMBLED REGENERATED FRAMES

NSSDC ID 67-075A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/06/67 TO 08/18/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH IS A COMPLETE SET OF THE USABLE LUNAR ORBITER 5 PHOTOGRAPHY, CONSISTS OF OVER 800 FIRST GENERATION NEGATIVE 20- BY 24-IN. FILM SHEETS. NASA'S LANGLEY RESEARCH CENTER PREPARED THESE ENHANCED PHOTOGRAPHS FROM ORIGINAL STATION VIDEO TAPES BY ELECTRONICALLY PREPROCESSING THE VIDEO SIGNAL PRIOR TO INPUT TO THE GROUND RECONSTRUCTION EQUIPMENT (GRE). TWO ENHANCEMENT PROCEDURES WERE USED. ONE PROCEDURE INVOLVED VARYING THE PARAMETERS OF GAIN FUNCTION, SIGNAL GAIN, AND SIGNAL OFFSET TO OPTIMIZE DETAIL AND CONTRAST IN THE PHOTOGRAPHIC DATA. THE OTHER INVOLVED THE USE OF AN ELECTRONIC MASK TO REDUCE THE UNDESIRABLE DENSITY GRADIENTS ACROSS THE SCAN AND FRAMELET. BOTH PROCEDURES REQUIRED POINT-BY-POINT EXPOSURE ADJUSTMENTS. THE ENHANCED PHOTOGRAPHS GENERATED FROM THE GRE WERE 35-MM POSITIVE TRANSPARENCIES. THE POSITIVES WERE ASSEMBLED INTO A 20- BY 24-IN. FORMAT, AND CONTACT NEGATIVES WERE MADE. ONE COMPLETE MR FRAME IS CONTAINED ON ONE SHEET WHEREAS THREE SHEETS ARE REQUIRED FOR ONE HR FRAME. THE PHOTOGRAPHS WERE CONTROLLED FOR DETAIL AND ARE NOT RECOMMENDED FOR PHOTOMETRIC STUDIES.

DATA SET NAME- 35-MM MICROFILM FRAME COMPOSITE

NSSDC ID 67-075A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/06/67 TO 08/18/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 5 PHOTOGRAPHY ON ONE REEL OF 35-MM POSITIVE MICROFILM. IT WAS PREPARED AT NSSDC BY MICROFILMING THE BEST PRINT AVAILABLE FROM EITHER DATA SET -01A OR -01B. THE QUALITY OF THE FILM IS SUITABLE FOR STUDIES REQUIRING MINIMUM PRECISION, BUT THIS DATA SET IS INTENDED PRIMARILY FOR SELECTING PHOTOGRAPHS FOR WHICH HIGH QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- LARC FIRST GENERATION 35-MM FRAMELETS

NSSDC ID 67-075A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/06/67 TO 08/18/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 170 ROLLS, EACH AVERAGING APPROXIMATELY 350 FT.



OF FIRST GENERATION NEGATIVE 35-MM FILM. THESE ROLLS CONTAIN THE INDIVIDUAL FRAMELETS FOR EACH LUNAR ORBITER 5 PHOTOGRAPH. THIS COMPLETE SET WAS PRODUCED BY THE LANGLEY RESEARCH CENTER FROM THE ORIGINAL (ZERO GENERATION) POSITIVES RECORDED BY THE GROUND RECONSTRUCTION EQUIPMENT (GRE) AT THE GROUND RECEIVING STATIONS. THESE FRAMELETS ARE USEFUL FOR DETAILED ANALYSIS OF LUNAR SURFACE FEATURES.

DATA SET NAME- REVISED PHOTOGRAPHIC SUPPORT DATA ON  
MAGNETIC TAPE

NSSDC ID 67-075A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 08/06/67 TO 08/18/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE SUPPORT DATA NECESSARY FOR ANALYSIS OF THE LUNAR ORBITER 5 PHOTOGRAPHS. THE PARAMETERS FOR EACH PHOTOGRAPH INCLUDE (1) SPACECRAFT LOCATION AND DISTANCE, (2) CAMERA POINTING ANGLES, (3) PHOTO LOCATION AND TIME, AND (4) APPROPRIATE SOLAR AZIMUTHS. THIS VERSION WAS COMPILED BY THE BOEING CO. AND WAS GENERATED IN JANUARY 1970. THESE ARE THE MOST ACCURATE PHOTO SUPPORT DATA AVAILABLE. THE DATA ARE CONTAINED ON ONE TIME-ORDERED, 7-TRACK, 556-BPI, BINARY TAPE THAT WAS PROCESSED ON A UNIVAC 1108 COMPUTER. A DUPLICATE TAPE, PROCESSED ON AN IBM 7094 COMPUTER, IS ALSO HELD BY NSSDC.

EXPERIMENT NAME- SELENODESY

NSSDC ID 67-075A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

INVESTIGATORS- W.H. MICHAEL, JR., NASA-LARC, HAMPTON, VA.

DATE LAST USEFUL DATA RECORDED- 01/31/68

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT INCLUDED A POWER SOURCE, AN OMNIDIRECTIONAL ANTENNA, AND A TRANSPONDER TO OBTAIN INFORMATION FOR DETERMINING THE GRAVITATIONAL FIELD AND PHYSICAL PROPERTIES OF THE MOON. HIGH-FREQUENCY RADIO SIGNALS WERE RECEIVED BY THE SPACECRAFT FROM EARTH TRACKING STATIONS AND RETRANSMITTED TO THE STATIONS TO PROVIDE DOPPLER FREQUENCY MEASUREMENTS (RANGE RATE) AND PROPAGATION TIMES (RANGE). THE TELEMETRY DATA WERE PROCESSED IN REAL TIME ON AN IBM 7044 COMPUTER IN CONJUNCTION WITH AN IBM 7094 COMPUTER. THEY WERE THEN DISPLAYED ON 100-WPM TELETYPE MACHINES, X-Y PLOTTERS, AND BULK PRINTERS FOR ANALYSIS. DATA COVERAGE WAS CONTINUOUS WHILE THE SPACECRAFT WAS VISIBLE FROM EARTH. INFORMATION WAS ACQUIRED DURING THE CISELUNAR, THE FIRST, SECOND, AND THIRD ELLIPSE, AND THE EXTENDED MISSION (FROM END OF PHOTOGRAPHIC MISSION TO LUNAR IMPACT) PHASES OF THE MISSION. DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA WERE ACCUMULATED DURING TRACKING. THE QUALITY OF RECORDED DATA RANGED FROM GOOD TO EXCELLENT.

DATA SET NAME- RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 67-075A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/01/67 TO 01/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TDP) PROGRAM. THIS MASTER FILE IS CONTAINED ON SEVEN BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- MODIFIED DATA (ODP) ON MAGNETIC TAPE

NSSDC ID 67-075A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/01/67 TO 01/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THE DATA ARE CONTAINED ON NINE BINARY, 7-TRACK, 556-BPI TAPES THAT WERE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED RAW DATA (TDP) ON MAGNETIC TAPE

NSSDC ID 67-075A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/01/67 TO 01/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA IN ESSENTIALLY RAW FORM. THE DATA HAVE BEEN CONVERTED INTO A COMMON SYSTEM OF UNITS, ORIENTED TO TIME AND STATION, AND CHECKED FOR AUTHENTICITY BY THE JPL TRACKING DATA PROCESSOR (TDP) PROGRAM. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE SEVEN TAPES OF DATA SET -02A ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED ON AN IBM 7094 COMPUTER.

DATA SET NAME- BLOCKED MODIFIED DATA (ODP) ON MAGNETIC  
TAPE

NSSDC ID 67-075A-020

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/01/67 TO 01/31/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DOPPLER, RANGING, HOUR ANGLE POINTS, AND DECLINATION ANGLE POINTS DATA THAT HAVE BEEN PROCESSED BY THE ORBIT DATA GENERATOR (ODG) PROGRAM. THIS PROGRAM PRODUCED THE ORBIT DETERMINATION PROGRAM (ODP) FILE. THE RAW DATA WERE MODIFIED BY STRIPPING THE DOPPLER BIAS, CORRECTING THE ANGULAR DATA, ASSOCIATING FREQUENCY WITH THE DOPPLER, AND LABELING THE TIME BLOCKS. THIS DATA SET WAS CREATED AT NSSDC BY PLACING THE DATA FROM THE NINE TAPES OF DATA SET -02B ONTO ONE BINARY, 7-TRACK, 556-BPI TAPE PROCESSED BY AN IBM 7094 COMPUTER.

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SPACECRAFT NAME- SURVEYOR 5  
OTHER NAMES- SURVEYOR-E, 1967-084A

NSSDC ID 67-084A

LAUNCH DATE- 09/08/67 DATE LAST SCIENTIFIC DATA RECORDED- 12/17/67

AGENCY- NASA SPACECRAFT WEIGHT IN ORBIT- 303 KG

ORBIT TYPE-	EPOCH-	/	/	ORBIT PERIOD-	MIN.
APOGEE-	KM RAD	PERIGEE-	KM RAD	INCLINATION-	DEGREES

SPACECRAFT BRIEF DESCRIPTION

SURVEYOR 5 WAS THE THIRD SPACECRAFT IN THE SURVEYOR SERIES TO ACHIEVE A SUCCESSFUL LUNAR SOFT LANDING. THE SPACECRAFT HAD A BASIC TRIANGULAR STRUCTURE OF ALUMINUM TUBING THAT PROVIDED MOUNTING SURFACES FOR ENGINEERING AND SCIENTIFIC EQUIPMENT. THE OBJECTIVES WERE TO OBTAIN POSTLANDING TELEVISION PICTURES OF THE LUNAR SURFACE, CONDUCT A VERNIER ENGINE EROSION EXPERIMENT, DETERMINE THE RELATIVE ABUNDANCE OF THE CHEMICAL ELEMENTS IN THE LUNAR SOIL, OBTAIN TOUCHDOWN DYNAMICS DATA, AND OBTAIN THERMAL AND RADAR REFLECTIVITY DATA. INSTRUMENTATION FOR THIS SPACECRAFT WAS SIMILAR TO THAT OF THE PREVIOUS SURVEYORS AND INCLUDED A TELEVISION CAMERA AND AUXILIARY MIRRORS, STRAIN GAGES ON THE SPACECRAFT LANDING LEGS, A VERNIER PROPULSION SYSTEM, AND NUMEROUS ENGINEERING SENSORS. AN ALPHA-SCATTERING INSTRUMENT WAS INSTALLED IN PLACE OF THE SURFACE SAMPLER, AND A SMALL BAR MAGNET ATTACHED TO ONE FOOTPAD WAS INCLUDED TO DETECT THE PRESENCE OF MAGNETIC MATERIAL IN THE LUNAR SOIL. THE SPACECRAFT LANDED ON SEPTEMBER 11, 1967, IN MARE TRANQUILLITATIS, AT 1.41 DEG N LATITUDE AND 23.18 DEG E LONGITUDE (SELENOGRAPHIC COORDINATES), WITHIN THE RIMLESS EDGE OF A SMALL CRATER ON A SLOPE OF ABOUT 20 DEG. THE SPACECRAFT TRANSMITTED EXCELLENT DATA FOR ALL EXPERIMENTS FROM SHORTLY AFTER TOUCHDOWN UNTIL OCTOBER 18, 1967, WITH AN INTERVAL OF NO TRANSMISSION FROM SEPTEMBER 24 TO

OCTOBER 15, 1967, DURING THE FIRST LUNAR NIGHT. TRANSMISSIONS WERE RECEIVED UNTIL NOVEMBER 1, 1967, WHEN SHUTDOWN FOR THE SECOND LUNAR NIGHT OCCURRED. TRANSMISSIONS WERE RESUMED ON THE THIRD AND FOURTH LUNAR DAYS, WITH THE FINAL TRANSMISSION OCCURRING ON DECEMBER 17, 1967. PICTURES WERE TRANSMITTED DURING THE FIRST, SECOND, AND FOURTH LUNAR DAYS.

EXPERIMENT NAME- TELEVISION

NSSDC ID 67-084A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- E.M. SHOEMAKER, CAL TECH , PASADENA, CALIF.  
R.M. BATSON, US GEOLOGICAL SURVEY , FLAGSTAFF, ARIZ.

DATE LAST USEFUL DATA RECORDED- 09/24/67

#### EXPERIMENT BRIEF DESCRIPTION

THE TV CAMERA CONSISTED OF A VIDICON TUBE, 25- AND 100-MM FOCAL LENGTH LENSES, SHUTTERS, COLOR FILTERS, AND IRIS MOUNTED ALONG AN AXIS INCLINED APPROXIMATELY 16 DEG TO THE CENTRAL AXIS OF THE SPACECRAFT. THE CAMERA WAS MOUNTED UNDER A MIRROR THAT COULD BE MOVED IN AZIMUTH AND ELEVATION. CAMERA OPERATION WAS TOTALLY DEPENDENT LPCN RECEIPT OF THE PROPER COMMAND STRUCTURE FROM EARTH. FRAME-BY-FRAME COVERAGE OF THE LUNAR SURFACE WAS OBTAINED OVER 360 DEG IN AZIMUTH AND FROM +40 DEG ABOVE THE PLANE NORMAL TO THE CAMERA Z AXIS TO -65 DEG BELOW THIS PLANE. BOTH 600-LINE AND 200-LINE MODES OF OPERATION WERE USED. THE 200-LINE MODE TRANSMITTED OVER AN OMNIDIRECTIONAL ANTENNA AND SCANNED ONE FRAME EACH 61.8 SEC. A COMPLETE VIDEO TRANSMISSION OF EACH 200-LINE PICTURE REQUIRED 20 SEC AND UTILIZED A BANDWIDTH OF 1.2 KHZ. MOST TRANSMISSIONS CONSISTED OF THE 600-LINE PICTURES, WHICH WERE TELEMETERED BY A DIRECTIONAL ANTENNA. THESE FRAMES WERE SCANNED EACH 3.6 SEC. EACH 600-LINE PICTURE REQUIRED NOMINALLY 1 SEC TO BE READ FROM THE VIDICON AND UTILIZED A 220-KHZ BANDWIDTH FOR TRANSMISSION. THE TELEVISION IMAGES WERE DISPLAYED ON A SLOW SCAN MONITOR COATED WITH A LONG PERSISTENCY PHOSPHOR. THE PERSISTENCY WAS SELECTED TO OPTIMALLY MATCH THE NOMINAL MAXIMUM FRAME RATE. ONE FRAME OF TV IDENTIFICATION WAS RECEIVED FOR EACH INCOMING TV FRAME AND WAS DISPLAYED IN REAL TIME AT A RATE COMPATIBLE WITH THAT OF THE INCOMING IMAGE. THESE DATA WERE RECORDED ON A VIDEO MAGNETIC TAPE RECORDER AND ON 70-MM FILM. DURING THE FIRST LUNAR DAY, WHICH ENDED ON SEPTEMBER 24, 1967, 18,006 HIGH QUALITY TELEVISION PICTURES WERE TRANSMITTED. AFTER BEING SHUT DOWN DURING THE LUNAR NIGHT, MORE THAN 20 DAYS, THE CAMERA RESPONDED TO COMMANDS AND TRANSMITTED AN ADDITIONAL 1048 PICTURES BETWEEN OCTOBER 15 AND OCTOBER 23, 1967. ANOTHER 64 PICTURES WERE TRANSMITTED ON THE FOURTH LUNAR DAY, BUT THE QUALITY OF PICTURES TAKEN AFTER THE FIRST LUNAR DAY WAS POOR DUE TO CAMERA DEGRADATION RESULTING FROM THE LUNAR NIGHT TEMPERATURES.

DATA SET NAME- ORIGINAL 70-MM PHOTOGRAPHY

NSSDC ID 67-084A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/12/67 TO 09/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS PHOTOGRAPHS OF THE LUNAR SURFACE TAKEN BETWEEN SEPTEMBER 12 AND SEPTEMBER 24, 1967. INCLUDED ARE WIDE- AND NARROW-ANGLE PANORAMAS, FOCUS-RANGING SURVEYS, PHOTOMETRIC SURVEYS, ALPHA-SCATTERING INSTRUMENT SUPPORT, SPECIAL AREA SURVEYS, AND CELESTIAL PHOTOGRAPHY. THE PHOTOGRAPHS ARE SECOND GENERATION FILM NEGATIVES ON 70-MM REELS IN 75 CANISTERS. THE NEGATIVE FILM WAS PRODUCED FROM THE ORIGINAL NEGATIVE VIA A MASTER POSITIVE.

DATA SET NAME- DIGITALLY PROCESSED 35-MM NEGATIVE  
PHOTOGRAPHY

NSSDC ID 67-084A-018

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/11/67 TO 09/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIFTY-SEVEN 35-MM FIRST GENERATION NEGATIVES PRODUCED AFTER ANALOG-TO-DIGITAL CONVERSION OF DATA TRANSMITTED BY THE SATELLITE. THE MAJORITY OF NEGATIVES SHOW THE MAGNET, BUT VIEWS OF THE FOOTPAD IMPRINT, THE AREA UNDER VERNIER THREE, THE ALPHA-SCATTERING DEVICE, THE AREA OF CRUSH BLOCK THREE, AND THE TEXTURE OF THE LUNAR SURFACE ARE ALSO INCLUDED. EIGHT NEGATIVES ARE FROM THE DEBLOCK AND REGISTER (D+R) PROGRAM, AND 49 ARE FROM THE SINE WAVE RESPONSE FILTER (SWRF) PROGRAM. THE D+R PROGRAM ADAPTS THE ANALOG-TO-DIGITAL CONVERSION OUTPUT TO A FORM MORE EASILY ADAPTABLE TO PROCESSING OPERATIONS. THE PROGRAM CONSISTS OF 600 DIGITAL RECORDS WRITTEN ON MAGNETIC TAPE AT 800 BPI REPRESENTING 600 PICTURE LINES. EACH RECORD NORMALLY CONTAINS 684 CHARACTERS CORRESPONDING TO THE PICTURE ELEMENTS (PIXELS) WITHIN A LINE. THIS IMAGE IS DIGITIZED ONLY. THE SWRF PROGRAM IS APPLIED TO THE RAW IMAGE AND RESTORES HIGH-FREQUENCY DATA (FINE DETAIL IN PICTURE) BOTH IN THE HORIZONTAL DIRECTIONAL ALONG THE CAMERA SCAN LINES AND IN THE VERTICAL DIRECTION. PICTURES PROCESSED BY SWRF WILL APPEAR MORE NOISY THAN THE ORIGINALS BUT WILL ALSO BE MUCH SHARPER AND SHOW MORE DETAIL.

DATA SET NAME- 4- BY 5-IN. MOSAIC NEGATIVE FILM SHEETS

NSSDC ID 67-084A-010

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/11/67 TO 09/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 237 MOSAIC PHOTOGRAPHS ON 4- BY 5-IN. BLACK AND WHITE NEGATIVE FILM SHEETS. THE MOSAICS ARE COMPOSED OF THE PHOTOGRAPHS TAKEN BETWEEN SEPTEMBER 11 AND SEPTEMBER 24, 1967. INCLUDED ARE ANALYTICAL, IMPROVED, RECTIFIED, AND SPHERICAL MOSAICS. ANALYTICAL MOSAICS ARE MADE BY PLACING THE PICTURES AT THEIR CORRECT NOMINAL LOCATION ON A PREPARED GRID

WITHOUT ATTEMPTING TO MATCH IMAGES. IMPROVED MCSAICS PRESENT A MORE COHERENT VIEW OF SMALL AREAS OF THE PANORAMA BECAUSE THE PICTURE IMAGES ARE CAREFULLY MATCHED. RECTIFIED MOSAICS ARE MADE BY TRANSFORMING THE IMAGE PLANE OF THE INDIVIDUAL PICTURES TO A PLANE OTHER THAN THAT PERPENDICULAR TO THE LINE OF SIGHT OF THE CAMERA. SPHERICAL, SEMI-IMPROVED, OR SEMI-ENHANCED MOSAICS ARE MADE ON THE INSIDE OF LARGE HEMISPHERES, BUT THEY ARE OTHERWISE SIMILAR TO IMPROVED MOSAICS. THIS PROCESS DOES NOT DISTORT PANORAMIC IMAGES AS DOES THE FLAT PROCESSING USED FOR THE OTHER MOSAICS.

DATA SET NAME- TELEVISION PHOTOGRAPHIC IDENTIFICATION  
ON MAGNETIC TAPE

NSSDC ID 67-084A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/12/67 TO 09/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS IDENTIFYING INFORMATION FOR SURVEYOR 5 PHOTOGRAPHS INCLUDING DAY OF YEAR, HOUR, MINUTE, SECOND, FILE NUMBER, SURVEY NUMBER, AZIMUTH ANGLE OF CAMERA MIRROR, ELEVATION ANGLE OF CAMERA MIRROR, FOCUS, IRIS SETTING, FILTER WHEEL POSITION, AND CAMERA FOCAL LENGTH FOR EACH PHOTOGRAPH. THE DATA SET IS CONTAINED ON ONE 7-TRACK, 556-BPI, MIXED MODE MAGNETIC TAPE AND IS ORDERED BY TIME.

DATA SET NAME- REGENERATED 70-MM PHOTOGRAPHY

NSSDC ID 67-084A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/11/67 TO 09/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE 70-MM LUNAR PHOTOGRAPHIC DATA THAT WERE ENHANCED BY COMPUTER PROGRAMS TO REDUCE NOISE, STREAKS, AND OTHER DISTORTIONS. THIS PROCESS GENERATES FILM WITH A SHARPER IMAGE THAN THAT POSSIBLE FROM NONREGENERATED FILM. A MASKING PROCESS ALSO MAKES THESE PICTURES MORE UNIFORM THAN THE ORIGINAL PHOTOGRAPHS. CORRECT TV IDENTIFICATION IS INCLUDED ON EACH FRAME. THE DATA ARE CONTAINED ON FIRST GENERATION 70-MM NEGATIVE FILM IN 31 CANISTERS. INCLUDED ARE PHOTOGRAPHS TAKEN BETWEEN SEPTEMBER 11 AND SEPTEMBER 24, 1967.

DATA SET NAME- SELECTED 4- BY 5-IN. MOSAIC NEGATIVE  
FILM SHEETS

NSSDC ID 67-084A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 09/11/67 TO 09/24/67

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONTAINS MOSAICS OF SURVEY PANORAMAS FOR USE IN INVESTIGATING SURFACE DETAIL. THIS SET WAS COMPILED FOR INTERPRETIVE WORK FROM THE BEST NEGATIVES AVAILABLE FROM JPL AND WILL BE INCLUDED IN THE ATLAS OF SURVEYOR 5 TELEVISION DATA TO BE PUBLISHED BY THE U.S. GEOLOGICAL SURVEY AS PART OF THEIR 'PROFESSIONAL PAPERS' ON THE SURVEYOR 5 MISSION. THE DATA SET CONSISTS OF 173 4-IN. BY 5-IN. NEGATIVE FILM SHEETS OF 201 IMPROVED (FLAT AND SPHERICAL) AND SPECIAL PURPOSE MOSAICS.

**EXPERIMENT NAME-** ALPHA-SCATTERING SURFACE ANALYZER

**NSSDC ID** 67-084A-02

**ORIGINAL EXPERIMENT INSTITUTION-** U OF CHICAGO

**INVESTIGATORS-** A.L. TURKEVICH, U OF CHICAGO, CHICAGO, ILL.  
E.J. FRANZGROTE, NASA-JPL, PASADENA, CALIF.

**DATE LAST USEFUL DATA RECORDED-** 09/23/67

**EXPERIMENT BRIEF DESCRIPTION**

THE ALPHA-SCATTERING SURFACE ANALYZER WAS DESIGNED TO MEASURE DIRECTLY THE ABUNDANCES OF THE MAJOR ELEMENTS OF THE LUNAR SURFACE. THE INSTRUMENTATION CONSISTED OF SIX ALPHA SOURCES (CURIUM 242) COLLIMATED TO IRRADIATE A 10-CM-DIAMETER OPENING IN THE BOTTOM OF THE INSTRUMENT WHERE THE SAMPLE WAS LOCATED AND TWO PARALLEL BUT INDEPENDENT CHARGED PARTICLE DETECTOR SYSTEMS. ONE SYSTEM, CONTAINING TWO SENSORS, DETECTED THE ENERGY SPECTRA OF THE ALPHA PARTICLES SCATTERED FROM THE LUNAR SURFACE, AND THE OTHER, CONTAINING FOUR SENSORS, DETECTED ENERGY SPECTRA OF THE PROTONS PRODUCED VIA REACTIONS (ALPHA AND PROTON) IN THE SURFACE MATERIAL. EACH DETECTOR ASSEMBLY WAS CONNECTED TO A PULSE HEIGHT ANALYZER, A DIGITAL ELECTRONICS PACKAGE, LOCATED IN A COMPARTMENT ON THE SPACECRAFT, CONTINUOUSLY TELEMETERED SIGNALS TO EARTH WHENEVER THE EXPERIMENT WAS OPERATING. THE SPECTRA CONTAINED QUANTITATIVE INFORMATION ON ALL MAJOR ELEMENTS IN THE SAMPLES EXCEPT FOR HYDROGEN, HELIUM, AND LITHIUM. THE EXPERIMENT PROVIDED 83 HR OF HIGH QUALITY DATA DURING THE FIRST LUNAR DAY. DURING THE SECOND LUNAR DAY, 22 HR OF DATA WERE ACCUMULATED. HOWEVER, DETECTOR NOISE POSED A PROBLEM IN THE REDUCTION OF DATA FROM THIS SECOND DAY.

**DATA SET NAME-** ALPHA-SCATTERING DATA ON MAGNETIC TAPE

**NSSDC ID** 67-084A-02A

**AVAILABILITY OF DATA SET-** DATA AT NSSDC READY FOR DISTRIBUTION

**TIME SPAN OF DATA-** 09/09/67 TO 09/23/67

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONTAINS THE BEST ALPHA-SCATTERING DATA OBTAINED FROM THE SECOND LUNAR SAMPLE TAKEN DURING THE FIRST LUNAR DAY OF THE EXPERIMENT

BETWEEN SEPTEMBER 17 TO 23, 1967. DATA RECORDED FOR SEPTEMBER 9, 1967, ARE OF THE INFLIGHT OPERATIONS. THE DATA ARE ON THREE 800-BPI, 7-TRACK, BINARY MAGNETIC TAPES GENERATED ON AN IBM 7094 COMPUTER.

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SPACECRAFT NAME- OSO 4  
OTHER NAMES- OSO-D, 1967-106A  
LAUNCH DATE- 10/18/67 DATE LAST SCIENTIFIC DATA RECORDED- 03/07/70  
AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 272.4 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 01/31/68 ORBIT PERIOD- 96 MIN.  
APOGEE- 569. KM ALT PERIGEE- 536. KM ALT INCLINATION- 33 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE OBJECTIVES OF THE OSO SATELLITE SERIES ARE TO PERFORM SOLAR PHYSICS EXPERIMENTS ABOVE THE ATMOSPHERE DURING A COMPLETE SOLAR CYCLE AND TO MAP THE ENTIRE CELESTIAL SPHERE FOR DIRECTION AND INTENSITY OF UV LIGHT, X-RAY, AND GAMMA RADIATION. THE OSO 4 PLATFORM CONSISTED OF A SAIL SECTION, WHICH POINTED TWO EXPERIMENTS CONTINUOUSLY TOWARD THE SUN, AND A WHEEL SECTION, WHICH SPUN ABOUT AN AXIS PERPENDICULAR TO THE POINTING DIRECTION OF THE SAIL AND CARRIED SEVEN EXPERIMENTS. ATTITUDE ADJUSTMENT WAS PERFORMED BY GAS JETS AND A MAGNETIC TORQUING COIL. A POINTING CONTROL SYSTEM PERMITTED THE POINTED EXPERIMENTS TO SCAN THE REGION OF THE SUN IN A 40- BY 40-ARC-MIN RASTER PATTERN. DATA WERE SIMULTANEOUSLY RECORDED ON TAPE AND TRANSMITTED BY PCM/PM TELEMETRY. A COMMAND SYSTEM PROVIDED FOR 140 GROUND-BASED COMMANDS. THE SPACECRAFT PERFORMED NORMALLY UNTIL THE SECOND TAPE RECORDER FAILED IN MAY 1968. THE SPACECRAFT WAS PUT IN STANDBY CONDITION IN NOVEMBER 1969 AND WILL BE TURNED ON NOW ONLY FOR RECORDING SPECIAL EVENTS IN REAL TIME. SUCH AN EVENT OCCURRED ON MARCH 7, 1970, WHEN OSO 4 RECORDED DATA DURING THE SOLAR ECLIPSE.

EXPERIMENT NAME- SOLAR EUV SPECTROMETER  
NSSDC ID 67-100A-07

ORIGINAL EXPERIMENT INSTITUTION- HARVARD COLLEGE OBS

INVESTIGATORS- L. GOLDBERG, HARVARD COLLEGE OBS , CAMBRIDGE, MASS.  
E.M. REEVES, HARVARD COLLEGE OBS , CAMBRIDGE, MASS.  
W.H. PARKINSON, HARVARD COLLEGE OBS , CAMERIDGE, MASS.

DATE LAST USEFUL DATA RECORDED- 11/29/67

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVE OF THE EXPERIMENT WAS TO MAP SOLAR EUV RADIATION INTENSITIES



IN THE 300- TO 1400-Å REGION. A SCANNING SPECTROMETER WAS USED IN TWO MODES OF OPERATION. IN THE WAVELENGTH SCAN MODE OF OPERATION, THE INSTRUMENT WAS POINTED AT THE CENTER OF THE SOLAR DISK, AND DATA ON THE SPECTRUM FROM 300 TO 1400 Å FOR AN AREA 1 ARC-MIN SQ WERE OBTAINED. ONE COMPLETE SCAN REQUIRED 31.5 MIN AND CONSISTED OF APPROXIMATELY 11,000 DISCRETE 0.1-Å STEPS OF THE RULED GRATING. A VISIBLE-LIGHT ZERO-ORDER DETECTOR WAS USED TO INDICATE ONE PARTICULAR POSITION IN THE WAVELENGTH SCAN. IN ADDITION, A MECHANICAL MICROSWITCH OPERATING DIRECTLY OFF THE GRATING CASE PROVIDED A REDUNDANT WAVELENGTH REFERENCE INDICATOR. COUNTS WERE RECORDED FOR 80 MSEC AS A FUNCTION OF STEP NUMBER FOLLOWING THE OPTICAL OR MECHANICAL REFERENCE POSITION. IN THE RASTER MODE, THE GRATING WAS POSITIONED AT A SELECTED WAVELENGTH TO AN ACCURACY OF 0.5 Å, AND THE POINTED SECTION OF THE SPACECRAFT WAS COMMANDED TO MAKE REPEATED RASTER SCANS. EACH SCAN REQUIRED ABOUT 5 MIN, AND THE COUNT RATE FROM A 1.0-ARC-MIN SQ FIELD WAS RECORDED IN A 40- BY 48-ELEMENT MATRIX. THE COMPLETE MATRIX COVERED A 36.5-ARC-MIN SQ AREA CENTERED IN THE CENTER OF THE SOLAR DISK. THE INSTRUMENT PROVIDED A SPECTRAL RESOLUTION OF APPROXIMATELY 1.6 Å AND A SPECTRAL PURITY OF 3.2 Å. THE EXPERIMENT STARTED OPERATING ON OCTOBER 25, 1967, AND PRODUCED MORE THAN 100 WAVELENGTH SCANS AND OVER 4000 SPECTROHELIOGRAMS (RASTER SCANS) IN 52 WAVELENGTHS. A FAILURE IN THE HIGH-VOLTAGE POWER SUPPLY OCCURRED DURING ORBIT 637 ON NOVEMBER 29, 1967, AND THE EXPERIMENT WAS TURNED OFF DURING ORBIT 646 ON NOVEMBER 30, 1967. THE SENSITIVITY OF THE INSTRUMENT VARIED WITH TIME AND WAS WAVELENGTH DEPENDENT. FORTY-FIVE WAVELENGTHS DISTRIBUTED THROUGHOUT THE ENTIRE SPECTRAL RANGE WERE USED TO FOLLOW THE TIME-DEPENDENT CHANGES.

DATA SET NAME- TABULATIONS OF COUNT RATES FOR ALL EUV SPECTROHELIOGRAMS ON TAPE NSSDC ID 67-100A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/25/67 TO 11/29/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ALL RECORDED SPECTROHELIOGRAMS. THE DATA ARE CONTAINED ON SIX 800-BPI, 7-TRACK, BINARY MAGNETIC TAPES. THE TAPES, FURNISHED TO NSSDC BY THE PRINCIPAL INVESTIGATOR, WERE CREATED ON AN IBM 7094 AND COPIED ON A CDC 6400. THE DATA ARE CONTAINED IN TWO LOGICAL RECORDS THAT OCCUR IN ALTERNATING SEQUENCE. RECORD A IS EITHER 119 WORDS OR 129 WORDS IN LENGTH AND CONTAINS IDENTIFICATION INFORMATION. RECORD B CONTAINS THE RASTER ARRAY DATA AND CONSISTS OF SEVEN PHYSICAL RECORDS OF 256 WORDS AND ONE RECORD OF 136 WORDS.

DATA SET NAME- SPECTRAL SCANS ON TAPE NSSDC ID 67-100A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/25/67 TO 11/27/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ALL SPECTRAL SCAN DATA OBTAINED BY THE EUV

SPECTROMETER. THE DATA ARE CONTAINED ON ONE 800-BPI, 7-TRACK, BINARY MAGNETIC TAPE. THE TAPE, FURNISHED TO NSSDC BY THE PRINCIPAL INVESTIGATOR, WAS CREATED ON AN IBM 7094 AND COPIED ON A CDC 6400. THE DATA ARE CONTAINED IN TWO LOGICAL RECORDS. RECORD A CONSISTS OF 127 WORDS AND CONTAINS IDENTIFYING INFORMATION FOR THE PARTICULAR SCAN. RECORD B CONTAINS THE SPECTRAL SCAN DATA AND CONSISTS OF SEVERAL PHYSICAL RECORDS 256 WORDS IN LENGTH. THE COUNT RATE HAS BEEN ENTERED FOR EACH STEP OF THE SPECTROMETER.

DATA SET NAME- MEAN SPECTROHELIOGRAMS FOR EACH ORBIT ON  
TAPE

NSSDC ID 67-100A-07C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/25/67 TO 11/25/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 375 MEAN SPECTROHELIOGRAMS PUBLISHED IN THE ASTROPHYSICAL JOURNAL SUPPLEMENT, VOL. 22, AUGUST 1970. EACH MEAN SPECTROHELIOGRAM WAS CONSTRUCTED FOR A GIVEN ORBIT BY AVERAGING THE HIGH QUALITY COUNT DATA FROM THE GOOD QUALITY RASTERS TO FORM A MATRIX OF RECORDED COUNTS. CALIBRATION CONSTANT AND IDENTIFICATION INFORMATION ARE SUPPLIED FOR EACH OF THE MEAN SPECTROHELIOGRAMS. THE DATA, WHICH ARE CONTAINED IN ONE FILE OF A 7-TRACK, 556-BPI, CDC 6400, BINARY MAGNETIC TAPE, WERE SUPPLIED TO NSSDC BY THE PRINCIPAL INVESTIGATOR. IDENTIFYING INFORMATION AND RASTER DATA FOR EACH MEAN SPECTROHELIOGRAM ARE CONTAINED IN ONE RECORD OF 1997 WORDS.

DATA SET NAME- AVERAGED QUIET SUN SPECTRAL SCAN COUNTS  
ON TAPE

NSSDC ID 67-100A-07D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 10/26/67 TO 10/27/67

DATA SET BRIEF DESCRIPTION

A NUMBER OF SPECTRAL SCANS WERE MADE DURING QUIET SOLAR CONDITIONS ON OCTOBER 26 AND 27, 1967 (ORBITS 114 TO 127). THE COUNTS FOR THE SAME GRATING STEP OF EACH OF THE SCANS WERE AVERAGED TO PROVIDE MAXIMUM SIGNAL TO NOISE RATIO. THIS AVERAGE NUMBER OF COUNTS, DIVIDED BY 2 FOR APPROXIMATELY 11.621 STEPS STARTING WITH STEP 1, ARE CONTAINED IN ONE FILE OF A 7-TRACK, 556-BPI TAPE THAT WAS PRODUCED AT NSSDC FROM PUNCH CARDS SUPPLIED BY THE PRINCIPAL INVESTIGATOR. DATA HAVE BEEN ENTERED AS BCD CARD IMAGES USING AN IBM 7094. CALIBRATION AND STEP NUMBER CONVERSION TO WAVELENGTH INFORMATION ARE AVAILABLE UPON REQUEST.

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SPACECRAFT NAME- SURVEYOR 6  
OTHER NAMES- SURVEYOR-F, 1967-112A

NSSDC ID 67-112A

LAUNCH DATE- 11/07/67 DATE LAST SCIENTIFIC DATA RECORDED- 11/24/67

AGENCY- NASA SPACECRAFT WEIGHT IN ORBIT- 299.6 KG

ORBIT TYPE- EPOCH- / / ORBIT PERIOD- MIN.  
APOGEE- KM ALT PERIGEE- KM ALT INCLINATION- DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS THE FOURTH OF THE SURVEYOR SERIES TO SUCCESSFULLY ACHIEVE A SOFT LANDING ON THE MOON. THE PRIMARY OBJECTIVES FOR THIS MISSION WERE TO LAND ON THE MOON, OBTAIN POSTLANDING TELEVISION PICTURES, DETERMINE THE ABUNDANCES OF THE CHEMICAL ELEMENTS IN THE LUNAR SOIL, OBTAIN TOUCHDOWN DYNAMICS DATA, OBTAIN THERMAL AND RADAR REFLECTIVITY DATA, AND CONDUCT A VERNIER ENGINE EROSION EXPERIMENT. VIRTUALLY IDENTICAL TO SURVEYOR 5, THIS SPACECRAFT CARRIED A TELEVISION CAMERA, A SMALL BAR MAGNET ATTACHED TO ONE FOOTPAD, AND AN ALPHA-SCATTERING INSTRUMENT, AS WELL AS THE NECESSARY ENGINEERING EQUIPMENT. IT LANDED ON NOVEMBER 10, 1967, IN SINUS MEDII, 0.49 DEG N LATITUDE AND 1.40 DEG W LONGITUDE - THE CENTER OF THE MOON'S VISIBLE HEMISPHERE. THIS SPACECRAFT ACCOMPLISHED ALL PLANNED OBJECTIVES AND ALSO PERFORMED A SUCCESSFUL 'HOP,' RISING APPROXIMATELY 4 M AND MOVING Laterally ABOUT 2.5 M TO A NEW LOCATION ON THE LUNAR SURFACE. THE SUCCESSFUL COMPLETION OF THIS MISSION SATISFIED THE SURVEYOR PROGRAM'S OBLIGATION TO THE APOLLO PROJECT. ON NOVEMBER 24, 1967, THE SPACECRAFT WAS SHUT DOWN FOR THE 2-WEEK LUNAR NIGHT. CONTACT WAS MADE ON DECEMBER 14, 1967, BUT NO USEFUL DATA WERE OBTAINED.

EXPERIMENT NAME- TELEVISION

NSSDC ID 67-112A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- E.M. SHOEMAKER, CAL TECH, PASADENA, CALIF.  
R.M. BATSON, US GEOLOGICAL SURVEY, FLAGSTAFF, ARIZ.  
R.A. ALTENHOFEN, US GEOLOGICAL SURVEY, FLAGSTAFF, ARIZ.

DATE LAST USEFUL DATA RECORDED- 11/24/67

#### EXPERIMENT BRIEF DESCRIPTION

THE TV CAMERA CONSISTED OF A VIDICON TUBE, 25- AND 100-MM FOCAL LENGTH LENSES, SHUTTERS, POLARIZING FILTERS (AS OPPOSED TO COLOR FILTERS USED ON THE PREVIOUS SURVEYOR CAMERAS), AND IRIS MOUNTED NEARLY VERTICALLY AND

SURMOUNTED BY A MIRROR THAT COULD BE ADJUSTED BY STEPPING MOTORS TO MOVE IN BOTH AZIMUTH AND ELEVATION. THE POLARIZING FILTERS SERVED AS ANALYZERS FOR THE DETECTION OF MEASUREMENTS OF THE LINEARLY POLARIZED COMPONENT OF LIGHT SCATTERED FROM THE LUNAR SURFACE. AN AUXILIARY MIRROR WAS USED FOR VIEWING THE LUNAR SURFACE BENEATH THE SPACECRAFT. THE FRAME-BY-FRAME COVERAGE OF THE LUNAR SURFACE PROVIDED A 360-DEG AZIMUTH VIEW AND AN ELEVATION VIEW FROM APPROXIMATELY +90 DEG ABOVE THE PLANE NORMAL TO THE CAMERA Z AXIS TO -60 DEG BELOW THIS SAME PLANE. BOTH 600-LINE AND 200-LINE MODES OF OPERATION WERE USED. THE 200-LINE MODE TRANSMITTED OVER AN OMNIDIRECTIONAL ANTENNA AND SCANNED ONE FRAME EACH 61.8 SEC. A COMPLETE VIDEO TRANSMISSION OF EACH 200-LINE PICTURE REQUIRED 20 SEC AND UTILIZED A BANDWIDTH OF 1.2 KHZ. MOST TRANSMISSIONS CONSISTED OF THE 600-LINE PICTURES, WHICH WERE TELEMETERED BY A DIRECTIONAL ANTENNA. THE FRAMES WERE SCANNED EACH 3.6 SEC. EACH FRAME REQUIRED NOMINALLY 1 SEC TO BE READ FROM THE VIDICON AND UTILIZED A 220-KHZ BANDWIDTH FOR TRANSMISSION. THE OPTICAL SURFACES WERE THE CLEANEST OF ANY MISSION BECAUSE OF A REDESIGNED MIRROR HOOD. THE TELEVISION IMAGES WERE DISPLAYED ON A SLOW SCAN MONITOR COATED WITH A LONG PERSISTENCY PHOSPHOR. THE PERSISTENCY WAS SELECTED TO OPTIMALLY MATCH THE NOMINAL MAXIMUM FRAME RATE. ONE FRAME OF TV IDENTIFICATION WAS RECEIVED FOR EACH INCOMING TV FRAME AND WAS DISPLAYED IN REAL TIME AT A RATE COMPATIBLE WITH THAT OF THE INCOMING IMAGE. THESE DATA WERE RECORDED ON A VIDEO MAGNETIC TAPE RECORDER AND ON 70-MM FILM. THE CAMERA PERFORMANCE WAS EXCELLENT IN TERMS OF BOTH THE QUANTITY AND QUALITY OF PICTURES. BETWEEN LUNAR LANDING, LUNAR 'SECOND' LANDING, AND THE LUNAR FIRST DAY SUNSET ON NOVEMBER 24, 1967, 29,914 PICTURES WERE TAKEN AND TRANSMITTED.

DATA SET NAME- ORIGINAL 70-MM PHOTOGRAPHY

NSSDC ID 67-112A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/10/67 TO 11/24/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS PHOTOGRAPHS OF THE LUNAR SURFACE TAKEN BETWEEN NOVEMBER 10 AND NOVEMBER 24, 1967. INCLUDED ARE WIDE- AND NARROW-ANGLE PANORAMAS, FOCUS-RANGING SURVEYS, PHOTOMETRIC SURVEYS, ALPHA-SCATTERING INSTRUMENT SUPPORT, SPECIAL AREA SURVEYS, AND CELESTIAL PHOTOGRAPHY. THE PHOTOGRAPHS ARE SECOND GENERATION FILM NEGATIVES ON 70-MM REELS IN 54 CANISTERS. THE NEGATIVE FILM WAS PRODUCED FROM THE ORIGINAL NEGATIVE VIA A MASTER POSITIVE.

DATA SET NAME- DIGITALLY PROCESSED 35-MM NEGATIVE  
PHOTOGRAPHY

NSSDC ID 67-112A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/10/67 TO 11/24/67

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 325 35-MM FIRST GENERATION NEGATIVES PRODUCED

AFTER ANALOG-TO-DIGITAL CONVERSION OF DATA TRANSMITTED BY THE SPACECRAFT, INCLUDED ARE VIEWS SHOWING THE TEXTURE OF THE LUNAR SURFACE, THE HORIZON, THE FOOTPADS, THE ALPHA-SCATTERING DEVICE WHEN STOWED, AND THE SOLAR CORONA. THE PHOTOGRAPHS WERE OUTPUT FROM THE DEBLOCK AND REGISTER (D+R) PROGRAM, WHICH ADAPTS THE ANALOG-TO-DIGITAL CONVERSION OUTPUT TO A FORM MORE EASILY ADAPTABLE TO PROCESSING OPERATIONS. THE PROGRAM CONSISTS OF 600 DIGITAL RECORDS WRITTEN ON MAGNETIC TAPE AT 800 BPI REPRESENTING 600 PICTURE LINES. EACH RECORD NORMALLY CONTAINS 684 CHARACTERS CORRESPONDING TO THE PICTURE ELEMENTS (PIXELS) WITHIN A LINE. THIS IMAGE IS DIGITIZED ONLY.

DATA SET NAME- 4- BY 5-IN. MOSAIC NEGATIVE FILM SHEETS NSSDC ID 67-112A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/10/67 TO 11/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 360 MOSAIC PHOTOGRAPHS ON 4- BY 5-IN. BLACK AND WHITE NEGATIVE FILM SHEETS. THE MOSAICS ARE COMPOSED OF THE PHOTOGRAPHS TAKEN BETWEEN NOVEMBER 10 AND NOVEMBER 24, 1967. INCLUDED ARE ANALYTICAL, IMPROVED, RECTIFIED, AND SPHERICAL MOSAICS. ANALYTICAL MOSAICS ARE MADE BY PLACING THE PICTURES AT THEIR CORRECT NOMINAL LOCATION ON A PREPARED GRID WITHOUT ATTEMPTING TO MATCH IMAGES. IMPROVED MOSAICS PRESENT A MORE COHERENT VIEW OF SMALL AREAS OF THE PANORAMA BECAUSE THE PICTURE IMAGES ARE CAREFULLY MATCHED. RECTIFIED MOSAICS ARE MADE BY TRANSFORMING THE IMAGE PLANE OF THE INDIVIDUAL PICTURES TO A PLANE OTHER THAN THAT PERPENDICULAR TO THE LINE OF SIGHT OF THE CAMERA. SPHERICAL, SEMI-IMPROVED, OR SEMI-ENHANCED MOSAICS ARE MADE ON THE INSIDE OF LARGE HEMISPHERES, BUT THEY ARE OTHERWISE SIMILAR TO IMPROVED MOSAICS. THIS PROCESS DOES NOT DISTORT PANORAMA IMAGES AS DOES THE FLAT PROCESSING USED FOR THE OTHER MOSAICS.

DATA SET NAME- TELEVISION PHOTOGRAPHIC IDENTIFICATION NSSDC ID 67-112A-01E  
ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/10/67 TO 11/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS IDENTIFYING INFORMATION FOR SURVEYOR 6 PHOTOGRAPHS INCLUDING DAY OF YEAR, HOUR, MINUTE, SECOND, FILE NUMBER, SURVEY NUMBER, AZIMUTH ANGLE OF CAMERA MIRROR, ELEVATION ANGLE OF CAMERA MIRROR, FOCUS, IRIS SETTING, FILTER WHEEL POSITION, AND CAMERA FOCAL LENGTH FOR EACH PHOTOGRAPH. THE DATA SET IS CONTAINED ON CNE 7-TRACK, 556-BPI, MIXED MODE MAGNETIC TAPE AND IS ORDERED BY TIME.

DATA SET NAME- REGENERATED 70-MM PHOTOGRAPHY

NSSDC ID 67-112A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/10/67 TO 11/24/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE LUNAR PHOTOGRAPHIC DATA THAT WERE ENHANCED BY COMPUTER PROGRAMS TO REDUCE NOISE, STREAKS, AND OTHER DISTORTIONS. THIS PROCESS GENERATES FILM WITH A SHARPER IMAGE THAN THAT POSSIBLE FROM NONREGENERATED FILM. A MASKING PROCESS ALSO MAKES THESE PICTURES MORE UNIFORM THAN THE ORIGINAL PHOTOGRAPHS. CORRECT TV IDENTIFICATION IS INCLUDED ON EACH FRAME. THE DATA ARE CONTAINED ON FIRST GENERATION 70-MM NEGATIVE FILM IN 126 CANISTERS. INCLUDED ARE PHOTOGRAPHS TAKEN BETWEEN NOVEMBER 10 AND NOVEMBER 24, 1967.

EXPERIMENT NAME- ALPHA-SCATTERING SURFACE ANALYZER

NSSDC ID 67-112A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- A.L. TURKEVICH, U OF CHICAGO, CHICAGO, ILL.  
E.J. FRANZGROTE, NASA-JPL, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 11/24/67

EXPERIMENT BRIEF DESCRIPTION

THE ALPHA-SCATTERING SURFACE ANALYZER WAS DESIGNED TO MEASURE DIRECTLY THE ABUNDANCES OF THE MAJOR ELEMENTS OF THE LUNAR SURFACE. THE INSTRUMENTATION CONSISTED OF AN ALPHA SOURCE (CURIUM 242) COLLIMATED TO IRRADIATE A 10-CM-DIAMETER OPENING IN THE BOTTOM OF THE INSTRUMENT WHERE THE SAMPLE WAS LOCATED AND TWO PARALLEL BUT INDEPENDENT CHARGED PARTICLE DETECTOR SYSTEMS. ONE SYSTEM, CONTAINING TWO SENSORS, DETECTED THE ENERGY SPECTRA OF THE ALPHA PARTICLES SCATTERED FROM THE LUNAR SURFACE, AND THE OTHER, CONTAINING FOUR SENSORS, DETECTED ENERGY SPECTRA OF THE PROTONS PRODUCED VIA REACTIONS (ALPHA AND PROTONS) IN THE SURFACE MATERIAL. EACH DETECTOR ASSEMBLY WAS CONNECTED TO A PULSE HEIGHT ANALYZER. A DIGITAL ELECTRONICS PACKAGE, LOCATED IN A COMPARTMENT ON THE SPACECRAFT, CONTINUOUSLY TELEMETERED SIGNALS TO EARTH WHENEVER THE EXPERIMENT WAS OPERATING. THE SPECTRA CONTAINED QUANTITATIVE INFORMATION ON ALL MAJOR ELEMENTS IN THE SAMPLES EXCEPT FOR HYDROGEN, HELIUM, AND LITHIUM. CURIUM COLLECTED ON THE COLLIMATOR FILMS AND WAS SCATTERED BY THE GOLD PLATING ON THE INSIDE BOTTOM OF THE SENSOR HEAD. THIS RESULTED IN A GRADUALLY INCREASING BACKGROUND AND REDUCTION OF THE SENSITIVITY TECHNIQUE FOR HEAVY ELEMENTS. ONE PROTON DETECTOR WAS TURNED OFF DURING THE SECOND DAY OF OPERATION BECAUSE OF NOISE. A TOTAL OF 43 HR OF DATA WAS OBTAINED FROM NOVEMBER 11 TO NOVEMBER 24, 1967. THE FINAL DATA WERE OBTAINED 4 HR AFTER LOCAL SUNSET. HOWEVER, AFTER THE SPACECRAFT 'HOPPING' MANEUVER ON NOVEMBER 17, 1967, THE SENSOR

HEAD WAS UPSIDE DOWN. MEASUREMENTS WERE CONTINUED IN ORDER TO OBTAIN INFORMATION ON SOLAR PROTONS AND COSMIC RAYS. THEREFORE, DATA FOR THE PURPOSE OF THE CHEMICAL ANALYSIS OF LUNAR SURFACE MATERIAL WERE OBTAINED ONLY DURING THE FIRST 30 HR OF OPERATION. DURING THIS PERIOD, 27 HR AND 44 MIN OF DATA WERE KNOWN TO BE NOISE FREE.

DATA SET NAME- ALPHA-SCATTERING DATA ON MAGNETIC TAPE NSSDC ID 67-112A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/10/67 TO 11/19/67

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE ALPHA-SCATTERING DATA OBTAINED FROM THE EXPERIMENT. THE DATA COVER STOWED OPERATIONS, BACKGROUND OPERATIONS, AND LUNAR SAMPLE ANALYSIS. DATA ARE ALSO GIVEN FOR THE PERIOD AFTER THE SPACECRAFT 'HOP,' WHILE THE SENSOR WAS UPSIDE DOWN. THE DATA ARE CONTAINED ON ONE 7-TRACK, 800-BPI, BINARY MAGNETIC TAPE GENERATED ON AN IBM 7094 COMPUTER.

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SPACECRAFT NAME- PIONEER 8 NSSDC ID 67-123A  
OTHER NAMES- PIONEER-C, 1967-123A

LAUNCH DATE- 12/13/67 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 63.43 KG

ORBIT TYPE- HELIOCENTRIC EPOCH- 12/13/67 ORBIT PERIOD- 386.6 DAYS  
APOGEE-1.0880 AU RAD PERIGEE- .9892 AU RAD INCLINATION- .0578 DEGREES

SPACECRAFT BRIEF DESCRIPTION

PIONEER 8 WAS THE THIRD IN A SERIES OF SOLAR-CRBITING, SPIN-STABILIZED, SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, THE INTERPLANETARY MAGNETIC FIELD, COSMIC DUST, AND ELECTRIC FIELDS. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED AT THE TWO HIGHEST BIT RATES. ANOTHER WAS

USED AT THE THREE LOWEST BIT RATES. THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE (1) REAL TIME, (2) TELEMETRY STORE, (3) DUTY CYCLE STORE, AND (4) MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME INTERVAL BETWEEN THE COLLECTION AND STORAGE OF SUCCESSIVE FRAMES COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. IN GENERAL, THE SPACECRAFT OPERATED WELL. DURING A REORIENTATION MANEUVER IN MARCH 1968, ONE OF THE FOUR SUN SENSORS (WHICH WAS CONNECTED TO THE ATTITUDE GAS SYSTEM USED TO KEEP THE SPIN AXIS POINTED) WAS FOUND TO BE INOPERATIVE. IT WAS NOTED AT THIS TIME THAT THE SPACECRAFT ATTITUDE WAS OFF 4 DEG. ANOTHER ORIENTATION WAS ATTEMPTED IN JUNE 1968, AND IT WAS FOUND THAT THREE OF THE FOUR ATTITUDE SUN SENSORS WERE INOPERATIVE. OPERATION OF THE SATELLITE HAS BEEN CONTINUOUS TO THE PRESENT (MARCH 1971).

EXPERIMENT NAME- PLASMA PROBE (AMES RESEARCH CENTER)

NSSDC ID 67-123A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

INVESTIGATORS- J.H. WOLFE, NASA-ARC , MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

A TRUNCATED HEMISPHERICAL ELECTROSTATIC ANALYZER (120 DEG TOTAL PARALLEL-PLATE CURVATURE) WITH THREE CONTIGUOUS CURRENT COLLECTORS WAS USED TO STUDY THE DIRECTIONAL INTENSITY OF THE ELECTRONS AND POSITIVE IONS IN THE SOLAR WIND. IONS WERE DETECTED IN 30 LOGARITHMICALLY SPACED ENERGY PER UNIT CHARGE (E/Q) STEPS FROM 150 TO 15,000 V. THERE WAS AN ELECTRON MODE OF OPERATION IN WHICH ELECTRONS WERE MEASURED IN 14 LOGARITHMICALLY SPACED E/Q STEPS RANGING FROM 12 TO 1000 V. THERE WAS ALSO A ZERO E/Q, OR BACKGROUND, STEP. IN OPERATION, THE ELECTRONS WERE MEASURED FIRST, THEN BACKGROUND, AND THEN THE IONS. THE THREE COLLECTORS MEASURED PARTICLES INCIDENT FROM THREE DIFFERENT CONTIGUOUS ANGULAR INTERVALS RELATIVE TO THE SPACECRAFT EQUATORIAL PLANE (SAME AS THE ECLIPTIC PLANE). TWO COLLECTORS MEASURED FLUX FROM 10 TO 85 DEG ON EITHER SIDE OF THE SPACECRAFT EQUATORIAL PLANE, AND THE THIRD MEASURED FLUX IN A 20-DEG INTERVAL CENTERED ON THE SPACECRAFT EQUATORIAL PLANE. AS THE SPACECRAFT WAS SPINNING, FLUXES WERE MEASURED IN 23 POSSIBLE 2-13/16-DEG-WIDE AZIMUTHAL ANGULAR SECTORS. SEVENTEEN OF THESE SECTORS WERE CONTIGUOUS AND BRACKETED THE SOLAR DIRECTION (AS DETERMINED BY REFERENCING THE NORMAL TO THE INSTRUMENT APERTURE TO THE SPACECRAFT SUN-SENSOR PULSE). THE REMAINING SIX SECTORS WERE WIDELY SPACED. THE INSTRUMENT HAD TWO MODES OF OPERATION -- FULL SCAN AND MAXIMUM FLUX. IN THE FULL SCAN MODE, THE MAXIMUM FLUX WAS OBSERVED IN EACH OF THE 23 AZIMUTHAL SECTORS FOR A GIVEN COLLECTOR AT A GIVEN E/Q STEP DURING A SINGLE



SPACECRAFT REVOLUTION. IN THE MAXIMUM FLUX MODE AT A GIVEN E/Q STEP, ALL THREE COLLECTORS WERE OBSERVED DURING A SINGLE SPACECRAFT REVOLUTION, AND THE MAXIMUM FLUX SEEN DURING THIS TIME WAS RETAINED ALONG WITH THE NUMBER OF THE COLLECTOR WHICH OBSERVED IT AND THE AZIMUTHAL DIRECTION OF THE OBSERVATION. AT THE HIGH BIT RATES (512 BPS AND 256 BPS), ALTERNATING FULL SCAN AND MAXIMUM FLUX MODE MEASUREMENTS WERE TAKEN FOR COLLECTOR NO. 1 FOR EACH OF THE 45 (14 ELECTRON, ONE BACKGROUND, AND 30 ION) E/Q STEPS. THE PROCESS WAS THEN REPEATED FOR COLLECTORS 2 AND 3. THUS, IN A FULL CYCLE OF HIGH BIT RATE DATA, FULL SCAN MODE MEASUREMENTS WERE MADE FOR ALL THREE COLLECTORS AT 45 E/Q STEPS, AS WELL AS THREE SETS OF MAXIMUM FLUX MODE MEASUREMENTS FOR THE 45 E/Q STEPS. AT THE LOW BIT RATES (64 BPS, 16 BPS, AND 8 BPS), THE MAXIMUM FLUX MODE ALONE WAS USED. THUS, NO AZIMUTHAL DISTRIBUTIONS WERE MEASURED. THE HIGH BIT RATE DATA WERE GATHERED ONLY IN THE FIRST FEW MONTHS OF THE MISSION. EXCEPT FOR ONE OF THE OUTER CURRENT COLLECTORS, THE INSTRUMENT HAS WORKED WELL FROM LAUNCH TO PRESENT (MARCH 1971).

DATA SET NAME- PLOTS OF ANALYZED PLASMA PARAMETERS ON  
MICROFILM

NSSDC ID 67-123A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/67 TO 01/26/68

#### DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED PLOTS OF THE FOLLOWING SOLAR WIND PARAMETERS -- (1) PROTON NUMBER DENSITY (PROTONS/CUBIC CM), (2) AZIMUTH (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX FOR IONS (DEG), (3) BULK VELOCITY (KM/SEC), (4) POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG), (5) PROTON TEMPERATURE AND HELIUM TEMPERATURE (DEG), (6) HELIUM/HYDROGEN RATIO (NUMBER OF HELIUM IONS/CUBIC CM/NUMBER OF PROTONS/CUBIC CM), (7) ELECTRON TEMPERATURE (DEG K), AND (8) TWO INDICATORS OF THE ANISOTROPY IN THE SOLAR PLASMA ION TEMPERATURE DISTRIBUTION. THE DATA ARE CONTAINED ON ONE REEL OF 16-MM MICROFILM AND HAVE A 90 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

EXPERIMENT NAME- TWO-FREQUENCY BEACON RECEIVER

NSSDC ID 67-123A-03

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- V.R. ESHLEMAN, STANFORD U, PALO ALTO, CALIF.  
T.A. CROFT, STANFORD U, PALO ALTO, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED

FROM A 4.6-M STEERABLE PARABOLIC ANTENNA AT STANFORD UNIVERSITY TO THE TWO-FREQUENCY RADIO RECEIVER ON THE SPACECRAFT. THE HIGH-FREQUENCY SIGNAL SERVED AS A REFERENCE SIGNAL SINCE ITS PROPAGATION TIME WAS NOT APPRECIABLY DELAYED. THE LOW-FREQUENCY SIGNAL WAS DELAYED IN PROPORTION TO THE TOTAL ELECTRON CONTENT IN THE PROPAGATION PATH. ON THE SPACECRAFT, A PHASE LOCKED RECEIVER COUNTED THE BEAT FREQUENCY ZERO CROSSINGS OF THE RECEIVED SIGNALS TO OBTAIN MEASUREMENTS OF PHASE-PATH DIFFERENCES. DIFFERENTIAL DELAY OF THE GROUP VELOCITY WAS ALSO OBSERVED, AND THESE VALUES WERE TELEMETERED TO THE GROUND STATION. FROM CALCULATED TOTAL ELECTRON CONTENT VALUES, THE IONOSPHERIC EFFECT (UP TO A SELECTED ALTITUDE OBTAINED FROM OTHER EXPERIMENTAL TECHNIQUES) WAS SUBTRACTED TO PRODUCE DATA DESCRIBING THE INTERPLANETARY ELECTRON CONTENT OF THE SOLAR WIND AND ITS VARIATIONS. THE EXPERIMENT HAS OPERATED NOMINALLY FROM LAUNCH TO THE PRESENT TIME (MARCH 1971). FOR SIMILAR EXPERIMENTS COVERING OTHER TIME PERIODS, SEE 68-100A-03, 66-075A-04, 65-105A-04, AND 67-060A-02. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN J. GEOPHYS. RES., 71, 3325-3327, 1966, AND IN RADIO SCIENCE, VOL. 6., 55-63, 1971.

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON TAPE

NSSDC ID 67-123A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/67 TO 08/25/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON CINE 556-BPI, 7-TRACK, BCD MAGNETIC TAPE GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE TAPE ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6, (65-105A-04A), 7 (66-075A-04A), AND 9 (68-100A-03A) AND MARINER 5 (67-060A-02A).

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON MICROFILM

NSSDC ID 67-123A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/14/67 TO 08/25/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED AND PLOTTED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED

FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM GENERATED AT NSSDC FROM DATA SUPPLIED BY THE EXPERIMENTER. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04B), 7 (66-075A-04B), AND 9 (68-100A-03B) AND MARINER 5 (67-060A-02B) AND SOLAR WIND ELECTRON DENSITY PLOTS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D).

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON TAPE

NSSDC ID 67-123A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/20/68 TO 08/30/70

## CATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF HOURLY VALUES OF NORMALIZED ELECTRON NUMBER DENSITY IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES, AND THE TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE THEN NORMALIZED TO 1 AU ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. VALUES RESULTING FROM INTERPOLATION ARE FLAGGED. NO INTERPOLATED VALUES WERE RECORDED WHEN DATA GAPS EXCEEDED 4 DAYS. THIS DATA SET IS ON ONE 800-BPI, 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN ON AN IBM 7094 COMPUTER. AUXILIARY DATA ON THE TAPE INCLUDE UT AND CARRINGTON ROTATION NUMBER. DATA ARE AVAILABLE FOR ABOUT 12 HR PER DAY WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04D), 7 (66-075A-04D), AND 9 (68-100A-03C) AND MARINER 5 (67-060A-02C) ALSO APPEAR ON THIS TAPE.

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON MICROFILM

NSSDC ID 67-123A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/20/68 TO 08/30/70

### CATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF PLOTS OF ELECTRON DENSITY VS TIME IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT FOR THE SAME TIMES AT A NEARBY LOCATION WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES. THEN THE OBSERVED TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE NORMALIZED TO 1 AU, ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR

OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), AND 9 (68-100A-03D) AND HOURLY VALUES OF TOTAL ELECTRON CONTENT FROM PIONEERS 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), AND 9 (68-100A-03B) AND MARINER 5 (67-060A-02B). THIS DATA SET IS ALSO AVAILABLE ON TAPE (67-123A-03C).

EXPERIMENT NAME- COSMIC-RAY GRADIENT DETECTOR

NSSDC ID 67-123A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

INVESTIGATORS- W.R. WEBBER, U OF NEW HAMPSHIRE, DURHAM, N.H.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED A TELESCOPE COMPRISED OF FIVE SOLID-STATE SENSORS, A CERENKOV DETECTOR, AND AN ANTICOINCIDENCE SHIELD. THE TELESCOPE AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. AS DETERMINED BY TWO COINCIDENCE MODES AND ELECTRONIC DISCRIMINATION OF SENSOR OUTPUT PULSES, PARTICLES MEASURED WERE ELECTRONS IN THREE CONTIGUOUS ENERGY INTERVALS BETWEEN 0.34 AND 8.4 MEV, PROTONS IN SIX CONTIGUOUS ENERGY INTERVALS BETWEEN 3.49 AND 64.3 MEV (ONE OF FIVE COUNT RATES WAS DUE TO THE SUM OF COUNTS IN TWO NONCONTIGUOUS ENERGY INTERVALS), AND ALPHA PARTICLES IN FOUR CONTIGUOUS ENERGY INTERVALS BETWEEN 6.64 AND 64.1 MEV/NUCLEON (ONE OF THREE COUNT RATES WAS DUE TO THE SUM OF COUNTS IN TWO NONCONTIGUOUS ENERGY INTERVALS). A THIRD COINCIDENCE MODE MEASURED THE SUM OF COUNTS DUE TO ELECTRONS ABOVE 0.6 MEV AND NUCLEI ABOVE 14 MEV/NUCLEON. SPACECRAFT SPIN-INTEGRATED DIRECTIONAL FLUXES WERE MEASURED IN THE FIRST THREE MODES, WHILE QUASI-OMNIDIRECTIONAL FLUXES WERE MEASURED IN THE FOURTH MODE. ACCUMULATION TIMES AND READOUT INTERVALS WERE DEPENDENT ON THE TELEMETRY BIT RATE AND WERE TYPICALLY IN TENS OF SECONDS. IN ALL CASES, THEY WERE LONGER THAN THE SPACECRAFT SPIN PERIOD. THE EXPERIMENT HAS FUNCTIONED WELL FROM LAUNCH TO THE PRESENT (MAY 1971) ALTHOUGH, AT THE PRESENT LOW TELEMETRY BIT RATES, ACCUMULATOR SATURATION HAS RENDERED SOME COUNTING MODES TO BE OF NO VALUE.

DATA SET NAME- TWENTY-MIN AVERAGES OF PARTICLE COUNT  
RATES ON MICROFILM

NSSDC ID 67-123A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/67 TO 04/10/68

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COPIES OF EXPERIMENTER GENERATED PLOTS OF 20-MIN AVERAGED COUNT RATES FOR ALL COINCIDENCE MODES AND DISCRIMINATION STATES EXCEPT FOR THE ALPHA PARTICLE COUNT RATES. (THE ALPHA PARTICLE COUNT RATE DATA ARE CONTAINED IN DATA SET 67-123A-06B.) AS OF JULY 1971, ESSENTIALLY COMPLETE DATA COVERING THE PERIOD DECEMBER 13, 1967, THROUGH APRIL 10, 1968, WERE AVAILABLE ON ONE REEL OF 16-MM MICROFILM. IT

IS ANTICIPATED THAT DATA FOR A LATER TIME PERIOD WILL SUBSEQUENTLY BECOME AVAILABLE.

DATA SET NAME- EIGHT-HR AVERAGES OF ALPHA PARTICLE  
COUNT RATES ON MICROFILM

NSSDC ID 67-123A-068

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/67 TO 04/10/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COPIES OF THREE EXPERIMENTER GENERATED PLOTS OF 8-HR AVERAGED ALPHA PARTICLE COUNT RATES. AS OF JULY 1971, COMPLETE DATA COVERING THE PERIOD DECEMBER 13, 1967, THROUGH APRIL 10, 1968, WERE AVAILABLE ON ONE REEL OF 16-MM MICROFILM, WHICH ALSO CONTAINS THE DATA FOR DATA SET 67-123A-06A. IT IS ANTICIPATED THAT DATA FOR A LATER TIME PERIOD WILL SUBSEQUENTLY BECOME AVAILABLE.

EXPERIMENT NAME- PLASMA WAVE MEASUREMENT

NSSDC ID 67-123A-07

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

INVESTIGATORS- F.L. SCARF, TRW SYSTEMS GROUP, REDONDC BEACH, CALIF.  
I.M. GREEN, TRW SYSTEMS GROUP, REDONDC BEACH, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

ELECTROSTATIC AND ELECTROMAGNETIC PLASMA WAVES WERE MEASURED IN THE SOLAR WIND NEAR 1 AU USING AN UNBALANCED DIPOLE ANTENNA. THE 423-MHZ STANFORD UNIVERSITY ANTENNA, WHICH SERVED AS THE SENSOR, WAS CAPACITIVELY COUPLED TO THREE CHANNELS. CHANNEL 1 WAS A 15-PERCENT BANDPASS FILTER CENTERED AT 400 HZ, A TYPICAL INTERPLANETARY ION CYCLOTRON FREQUENCY. CHANNEL 2 WAS A 15-PERCENT BANDPASS FILTER CENTERED AT 22 KHZ, A TYPICAL INTERPLANETARY ELECTRON CYCLOTRON FREQUENCY. CHANNEL 3, THE BROADBAND CHANNEL, WAS FED INTO A COUNT RATE METER THAT MEASURED THE NUMBER OF POSITIVE GOING PULSES PER UNIT TIME HAVING AMPLITUDES LARGE ENOUGH TO CROSS THE TRIGGER LEVEL PRESENT. THE TRIGGER LEVEL WAS VARIED IN 16 STEPS PER TELEMETRY SEQUENCE. THE TRIGGER LEVELS TOGETHER WITH THE COUNT RATE AT EACH LEVEL GAVE A MEASURE OF THE BROADBAND POWER SPECTRUM. AT THE HIGHEST TELEMETRY RATE OF PIONEER 8, THIS SEQUENCE WAS REPEATED EVERY 7.47 MIN. THE EXPERIMENT HAS OPERATED NORMALLY TO PRESENT (JUNE 1971).

DATA SET NAME- REDUCED ELECTRIC FIELD DATA ON MICROFILM

NSSDC ID 67-123A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/67 TO 10/07/68

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, ON 16 REELS OF 35-MM MICROFILM, ARE PLOTS OF THE BROADBAND OUTPUT, THE 400-HZ OUTPUT, AND THE 22-KHZ OUTPUT AFTER CALIBRATION AND IN THE FINEST TIME SCALE AVAILABLE FROM THE TELEMETERED DATA. THE APPROPRIATE STATISTICAL INFORMATION ACCUMULATED OVER EACH EXPERIMENT CYCLE IS ALSO INCLUDED. IT SHOULD BE NOTED THAT THE EXPERIMENT CYCLE DEPENDED ON THE BIT RATE OF THE TRANSMITTER AND VARIED FROM 7.47 MIN TO 1 HR FOR ONE BROADBAND MEASUREMENT OF 16 STEPS AND FOR SIXTEEN 400-HZ AND SIXTEEN 22-KHZ MEASUREMENTS. THE 22-KHZ CHANNEL WAS DEGRADED CONSIDERABLY FROM SPACECRAFT INTERFERENCE AND WAS USEFUL ONLY WHEN STRONG 22-KHZ SIGNALS WERE PRESENT IN THE AMBIENT PLASMA.

DATA SET NAME- SUMMARY PLOTS OF EACH EXPERIMENT CYCLE  
ON MICROFILM

NSSDC ID 67-123A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 12/13/67 TO 09/23/68

DATA SET BRIEF DESCRIPTION

THESE DATA, ON TWO REELS OF EXPERIMENTER GENERATED 35-MM MICROFILM, SUMMARIZE MOST OF THE DATA IN DATA SET 67-123A-07A. THEY CONTAIN MAXIMUM AND MINIMUM 400-HZ LEVEL, MAXIMUM AND MINIMUM 22-KHZ LEVEL, AND THE AVERAGE OF TWO (STEP 7) 100-HZ BROADBAND LEVELS. PRESENTED FOR EACH EXPERIMENT CYCLE (1024 MAIN TELEMETRY FRAMES) IN THE FULL DATA PLOTS, THEY REPRESENT ABOUT ONE TO EIGHT DATA POINTS PER HOUR.

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SPACECRAFT NAME- SURVEYOR 7

NSSDC ID 68-001A

OTHER NAMES- 1562-001A, SURVEYOR-G

LAUNCH DATE- 01/07/68

DATE LAST SCIENTIFIC DATA RECORDED- 02/21/68

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT-

305.7 KG

ORBIT TYPE-

EPOCH-

/

/

ORBIT PERIOD-

MIN.

APOGEE- AU RAD

PERIGEE-

AU RAD

INCLINATION-

DEGREES

SPACECRAFT BRIEF DESCRIPTION

SURVEYOR 7 WAS THE FIFTH AND FINAL SPACECRAFT OF THE SURVEYOR SERIES TO

ACHIEVE A LUNAR SOFT LANDING. THE OBJECTIVES FOR THIS MISSION WERE TO PERFORM A LUNAR SOFT LANDING (IN AN AREA WELL REMOVED FROM THE MARIA TO PROVIDE A TYPE OF TERRAIN PHOTOGRAPHY AND LUNAR SAMPLE SIGNIFICANTLY DIFFERENT FROM THOSE OF OTHER SURVEYOR MISSIONS), OBTAIN POSTLANDING TV PICTURES, DETERMINE THE RELATIVE ABUNDANCES OF CHEMICAL ELEMENTS, MANIPULATE THE LUNAR MATERIAL, OBTAIN TOUCHDOWN DYNAMICS DATA, AND OBTAIN THERMAL AND RADAR REFLECTIVITY DATA. THIS SPACECRAFT WAS SIMILAR IN DESIGN TO THE PREVIOUS SURVEYORS, BUT IT CARRIED MORE SCIENTIFIC EQUIPMENT INCLUDING (1) A TELEVISION CAMERA WITH POLARIZING FILTERS, (2) AN ALPHA-SCATTERING INSTRUMENT, (3) A SURFACE SAMPLER, (4) BAR MAGNETS ON TWO FOOTPADS, (5) TWO HORSESHOE MAGNETS ON THE SURFACE SCOOP, AND (6) AUXILIARY MIRRORS -- THREE TO OBSERVE AREAS BELOW THE SPACECRAFT, ONE TO PROVIDE STEREOSCOPIC VIEWS OF THE SURFACE SAMPLER AREA, AND SEVEN TO SHOW LUNAR MATERIAL DEPOSITED ON THE SPACECRAFT. THE SPACECRAFT LANDED ON THE LUNAR SURFACE ON JANUARY 10, 1968, ON THE OUTER RIM OF THE CRATER TYCHO, 40.8 DEG S LATITUDE, 11.4 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES). OPERATIONS OF THE SPACECRAFT BEGAN SHORTLY AFTER THE SOFT LANDING AND WERE TERMINATED ON JANUARY 26, 1968, 80 HR AFTER SUNSET. SECOND LUNAR DAY OPERATIONS OCCURRED FROM FEBRUARY 12 TO 21, 1968. THE MISSION OBJECTIVES WERE FULLY SATISFIED BY THE SPACECRAFT OPERATIONS.

EXPERIMENT NAME- TELEVISION

NSSDC ID 68-001A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- E.M. SHOEMAKER, CAL TECH , PASADENA, CALIF.  
R.M. BATSON, US GEOLOGICAL SURVEY , FLAGSTAFF, ARIZ.

DATE LAST USEFUL DATA RECORDED- 02/14/68

#### EXPERIMENT BRIEF DESCRIPTION

THE TV CAMERA CONSISTED OF A VIDICON TUBE, 25- AND 100-MM FOCAL LENGTH LENSES, SHUTTERS, POLARIZING FILTERS, AND IRIS MOUNTED NEARLY VERTICALLY AND SURMOUNTED BY A MIRROR THAT COULD BE ADJUSTED BY STEPPING MOTORS TO MOVE IN BOTH AZIMUTH AND ELEVATION. THE POLARIZING FILTERS SERVED AS ANALYZERS FOR THE DETECTION OF MEASUREMENTS OF THE LINEARLY POLARIZED COMPONENT OF LIGHT SCATTERED FROM THE LUNAR SURFACE. THE FRAME-BY-FRAME COVERAGE OF THE LUNAR SURFACE PROVIDED A 360-DEG AZIMUTH VIEW AND AN ELEVATION VIEW FROM APPROXIMATELY +90 DEG ABOVE THE PLANE NORMAL TO THE CAMERA Z AXIS TO -60 DEG BELOW THIS SAME PLANE. BOTH 600-LINE AND 200-LINE MODES OF OPERATION WERE USED. THE 200-LINE MODE TRANSMITTED OVER AN OMNIDIRECTIONAL ANTENNA AND SCANNED ONE FRAME EACH 61.8 SEC. A COMPLETE VIDEO TRANSMISSION OF EACH 200-LINE PICTURE REQUIRED 20 SEC AND UTILIZED A BANDWIDTH OF 1.2 KHZ. MOST TRANSMISSIONS CONSISTED OF 600-LINE PICTURES, WHICH WERE TELEMETERED BY A DIRECTIONAL ANTENNA. THE FRAMES WERE SCANNED EACH 3.6 SEC. EACH FRAME REQUIRED NOMINALLY 1 SEC TO BE READ FROM THE VIDICON AND UTILIZED A 220-KHZ BANDWIDTH FOR TRANSMISSION. THE DYNAMIC RANGE AND SENSITIVITY OF THIS CAMERA WERE SLIGHTLY LESS THAN THOSE ON THE SURVEYOR 6 CAMERA. RESOLUTION AND QUALITY WERE EXCELLENT. THE TELEVISION IMAGES WERE DISPLAYED ON A SLOW SCAN MONITOR COATED WITH A LONG PERSISTENCY PHOSPHOR. THE PERSISTENCY WAS SELECTED TO OPTIMALLY MATCH THE NOMINAL

MAXIMUM FRAME RATE. ONE FRAME OF TV IDENTIFICATION WAS RECEIVED FOR EACH INCOMING TV FRAME AND WAS DISPLAYED IN REAL TIME AT A RATE COMPATIBLE WITH THAT OF THE INCOMING IMAGE. THESE DATA WERE RECORDED ON A VIDEO MAGNETIC TAPE RECORDER AND ON 70-MM FILM. THE CAMERA TRANSMITTED 20,961 PICTURES DURING THE FIRST LUNAR DAY, JANUARY 10 TO 22, 1968. FROM FEBRUARY 12 TO 14, THE CAMERA WAS OPERATED IN THE 200-LINE MODE BECAUSE OF LOSS OF HORIZONTAL SWEEP IN THE 600-LINE MODE. DURING THE SECOND LUNAR DAY, 45 PICTURES WERE TRANSMITTED BEFORE LOSS OF POWER CAUSED SUSPENSION OF CAMERA OPERATION.

DATA SET NAME- ORIGINAL 70-MM PHOTOGRAPHY

NSSDC ID 68-001A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 01/10/68 TO 01/21/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS PHOTOGRAPHS OF THE LUNAR SURFACE TAKEN BETWEEN JANUARY 10 AND JANUARY 21, 1968. INCLUDED ARE WIDE- AND NARROW-ANGLE PANORAMAS, FOCUS-RANGING SURVEYS, PHOTOMETRIC SURVEYS, STEREO-MIRROR SURVEYS, ALPHA-SCATTERING INSTRUMENT SUPPORT, ALPHA-SCATTERING INSTRUMENT DEPLOYMENT SUPPORT, SURFACE SAMPLER AREA SURVEYS, SURFACE SAMPLER OPERATIONS SUPPORT, SPECIAL AREA SURVEYS, AND EARTH AND CELESTIAL PHOTOGRAPHY. THE PHOTOGRAPHS ARE ON 70-MM SECOND GENERATION NEGATIVE FILM REELS IN 87 CANISTERS. THE NEGATIVE FILM WAS PRODUCED FROM THE ORIGINAL NEGATIVE VIA A MASTER POSITIVE.

DATA SET NAME- DIGITALLY PROCESSED 35-MM NEGATIVE  
PHOTOGRAPHY

NSSDC ID 68-001A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/10/68 TO 01/22/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SEVENTY-THREE 35-MM FIRST GENERATION NEGATIVES PRODUCED AFTER ANALOG-TO-DIGITAL CONVERSION OF DATA TRANSMITTED BY THE SPACECRAFT. INCLUDED ARE VIEWS OF ROCKS ON THE LUNAR SURFACE, A CRATER, A VALLEY, SLOPES, THE HORIZON, THE ALPHA-SCATTERING INSTRUMENT, THE STEREO MIRROR, DEBRIS, AND THE SOIL MECHANICS SURFACE SAMPLER. THERE ARE 17 NEGATIVES FROM THE DEBLOCK AND REGISTER (D+R) PROGRAM AND 56 FROM THE SINE WAVE RESPONSE FILTER (SWRF) PROGRAM. THE D+R PROGRAM ADAPTS THE ANALOG-TO-DIGITAL CONVERSION OUTPUT TO A FORM MORE EASILY ADAPTABLE TO PROCESSING OPERATIONS. IT CONSISTS OF 600 DIGITAL RECORDS, WRITTEN ON MAGNETIC TAPE AT 800 BPI, REPRESENTING 600 PICTURE LINES. EACH RECORD NORMALLY CONTAINS 684 CHARACTERS CORRESPONDING TO THE PICTURE ELEMENTS (PIXELS) WITHIN A LINE. THIS IMAGE IS DIGITIZED ONLY. THE SWRF PROGRAM IS APPLIED TO THE RAW IMAGE AND RESTORES HIGH-FREQUENCY DATA (FINE DETAIL IN PICTURE) BOTH IN THE HORIZONTAL DIRECTION ALONG THE CAMERA SCAN LINES AND IN THE VERTICAL DIRECTION. PICTURES PROCESSED BY SWRF WILL APPEAR MORE



NOISY THAN THE ORIGINALS BUT WILL ALSO BE MUCH SHARPER.

DATA SET NAME- 4- BY 5-IN. MOSAIC NEGATIVE FILM SHEETS NSSDC ID 68-001A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 01/10/68 TO 02/14/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 243 MOSAIC PHOTOGRAPHS ON 4- BY 5-IN. BLACK AND WHITE NEGATIVE FILM SHEETS. THE MOSAICS ARE COMPOSED OF THE PHOTOGRAPHS TAKEN BETWEEN JANUARY 10 AND FEBRUARY 14, 1968. INCLUDED ARE ANALYTICAL, IMPROVED, RECTIFIED, AND SPHERICAL MOSAICS. ANALYTICAL MOSAICS ARE MADE BY PLACING THE PICTURES AT THEIR CORRECT NOMINAL LOCATION ON A PREPARED GRID WITHOUT ATTEMPTING TO MATCH IMAGES. IMPROVED MOSAICS PRESENT A MORE COHERENT VIEW OF SMALL AREAS OF THE PANORAMA BECAUSE THE PICTURE IMAGES ARE CAREFULLY MATCHED. RECTIFIED MOSAICS ARE MADE BY TRANSFORMING THE IMAGE PLANE OF THE INDIVIDUAL PICTURES TO A PLANE OTHER THAN THAT PERPENDICULAR TO THE LINE OF SIGHT OF THE CAMERA. SPHERICAL, SEMI-IMPROVED, OR SEMI-ENHANCED MOSAICS ARE MADE ON THE INSIDE OF LARGE HEMISPHERES, BUT THEY ARE OTHERWISE SIMILAR TO IMPROVED MOSAICS. THIS PROCESS DOES NOT DISTORT PANORAMA IMAGES AS DOES THE FLAT PROCESSING USED FOR THE OTHER MOSAICS.

DATA SET NAME- TELEVISION PHOTOGRAPHIC IDENTIFICATION NSSDC ID 68-001A-01E  
ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 01/10/68 TO 01/21/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS IDENTIFYING INFORMATION FOR SURVEYOR 7 PHOTOGRAPHS INCLUDING DAY OF YEAR, HOUR, MINUTE, SECOND, FILE NUMBER, SURVEY NUMBER, AZIMUTH ANGLE OF CAMERA MIRROR, ELEVATION ANGLE OF CAMERA MIRROR, FOCUS, IRIS SETTING, FILTER WHEEL POSITION, AND CAMERA FOCAL LENGTH FOR EACH PHOTOGRAPH. THE DATA SET IS CONTAINED ON ONE 7-TRACK, 556-BPI, MIXED MODE MAGNETIC TAPE AND IS ORDERED BY TIME.

DATA SET NAME- REGENERATED 70-MM PHOTOGRAPHY NSSDC ID 68-001A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 01/10/68 TO 01/21/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE 70-MM LUNAR PHOTOGRAPHIC DATA THAT WERE

ENHANCED BY COMPUTER PROGRAMS TO REDUCE NOISE, STREAKS, AND OTHER DISTORTIONS. THIS PROCESS GENERATES FILM WITH A SHARPER IMAGE THAN THAT POSSIBLE FROM NONREGENERATED FILM. A MASKING PROCESS ALSO MAKES THESE PICTURES MORE UNIFORM THAN THE ORIGINAL PHOTOGRAPHS. CORRECT TV IDENTIFICATION IS INCLUDED ON EACH FRAME. THE DATA ARE CONTAINED ON FIRST GENERATION 70-MM FILM NEGATIVES IN 42 CANISTERS. INCLUDED ARE PHOTOGRAPHS TAKEN BETWEEN JANUARY 10 AND JANUARY 21, 1968.

EXPERIMENT NAME- SOIL MECHANICS SURFACE SAMPLER

NSSDC ID 68-001A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

INVESTIGATORS- R.F. SCOTT, CAL TECH, PASADENA, CALIF.

R. HAYTHORNEWAITE, U OF PENNSYLVANIA, UNIVERSITY PARK, PA.

DATE LAST USEFUL DATA RECORDED- 01/23/68

#### EXPERIMENT BRIEF DESCRIPTION

THE SOIL MECHANICS SURFACE SAMPLER WAS DESIGNED TO PICK UP, DIG, SCRAPE, AND TRENCH THE LUNAR SURFACE, AND TRANSPORT LUNAR SURFACE MATERIAL WHILE BEING PHOTOGRAPHED SO THAT THE PROPERTIES OF THE LUNAR SURFACE COULD BE DETERMINED. THE SAMPLER CONSISTED PRIMARILY OF A SCOOP WITH A CONTAINER, A SHARPENED BLADE, AND AN ELECTRICAL MOTOR TO OPEN AND CLOSE THE CONTAINER. THE FLAT FOOT OF THE SCOOP INCORPORATED TWO EMBEDDED RECTANGULAR HORSESHOE MAGNETS. THE SCOOP WAS MOUNTED ON A PANTOGRAPH ARM THAT COULD BE EXTENDED ABOUT 1.5 M OR RETRACTED CLOSE TO THE SPACECRAFT MOTOR DRIVE. THE ARM COULD ALSO BE MOVED FROM AN AZIMUTH OF +40 DEG TO -72 DEG OR BE ELEVATED 13 CM BY MOTOR DRIVES. IT COULD ALSO BE DROPPED ONTO THE LUNAR SURFACE UNDER FORCE PROVIDED BY GRAVITY AND A SPRING. THE SCOOP WAS MOUNTED BELOW THE TELEVISION CAMERA IN A POSITION THAT ALLOWED IT TO REACH THE ALPHA-SCATTERING INSTRUMENT IN ITS DEPLOYED POSITION AND REDEPLOY IT TO ANOTHER SELECTED LOCATION. THE INSTRUMENT PERFORMED 16 BEARING TESTS, SEVEN TRENCHING TESTS, AND TWO IMPACT TESTS. IT ALSO FREED THE ALPHA-SCATTERING INSTRUMENT WHEN IT FAILED TO DEPLOY ON THE LUNAR SURFACE, SHADED THIS INSTRUMENT, AND MOVED THIS INSTRUMENT FOR EVALUATION OF OTHER SAMPLES. PERFORMANCE WAS FLAWLESS DURING 36 HR OF OPERATION BETWEEN JANUARY 11 AND JANUARY 23, 1968. THE INSTRUMENT RESPONDED TO COMMANDS ON FEBRUARY 14, 1968, WHICH VERIFIED THAT IT HAD SURVIVED THE LUNAR NIGHT. THE POWER SYSTEM, HOWEVER, WAS UNABLE TO SUPPORT ANY OPERATIONS.

DATA SET NAME- SURFACE SAMPLER MOTOR CURRENT DATA ON MICROFILM

NSSDC ID 68-001A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 01/11/68 TO 01/22/68

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PLOTS OF SURFACE SAMPLER MOTOR CURRENT IN AMPS VS

TIME. THE PLOTS COVER THREE TIME PERIODS -- JANUARY 11 TO 14, 1968, JANUARY 19 TO 20, 1968, AND JANUARY 20 TO 22, 1968. THE PLOTS INCLUDE DATA FROM RETRACTION, LOWERING, ELEVATION, AND EXTENSION COMMANDS. THE DATA SET IS CONTAINED ON ONE REEL OF 35-MM MICROFILM.

EXPERIMENT NAME- ALPHA-SCATTERING SURFACE ANALYZER

NSSDC ID 68-001A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

INVESTIGATORS- A.L. TURKEVICH, U OF CHICAGO , CHICAGO, ILL.

DATE LAST USEFUL DATA RECORDED- 02/20/68

EXPERIMENT BRIEF DESCRIPTION

THE ALPHA-SCATTERING SURFACE ANALYZER WAS DESIGNED TO MEASURE DIRECTLY THE ABUNDANCES OF THE MAJOR ELEMENTS OF THE LUNAR SURFACE. THE INSTRUMENTATION CONSISTED OF AN ALPHA SOURCE (CURIUM 242) COLLIMATED TO IRRADIATE A 10-CM-DIAMETER OPENING IN THE BOTTOM OF THE INSTRUMENT WHERE THE SAMPLE WAS LOCATED AND TWO PARALLEL BUT INDEPENDENT CHARGED PARTICLE DETECTOR SYSTEMS. ONE SYSTEM, CONTAINING TWO SENSORS, DETECTED THE ENERGY SPECTRA OF THE ALPHA PARTICLES SCATTERED FROM THE LUNAR SURFACE, AND THE OTHER, CONTAINING FOUR SENSORS, DETECTED ENERGY SPECTRA OF THE PROTONS PRODUCED VIA REACTIONS (ALPHA AND PROTON) IN THE SURFACE MATERIAL. EACH DETECTOR ASSEMBLY WAS CONNECTED TO A PULSE HEIGHT ANALYZER. A DIGITAL ELECTRONICS PACKAGE, LOCATED IN A COMPARTMENT ON THE SPACECRAFT, CONTINUOUSLY TELEMETERED SIGNALS TO EARTH WHENEVER THE EXPERIMENT WAS OPERATING. THE SPECTRA CONTAINED QUANTITATIVE INFORMATION ON ALL MAJOR ELEMENTS IN THE SAMPLES EXCEPT FOR HYDROGEN, HELIUM, AND LITHIUM. THE EXPERIMENT PROVIDED 46 HR OF DATA ACCUMULATED FROM THREE LUNAR-SURFACE SAMPLE MEASUREMENTS. THESE MEASUREMENTS WERE OF A PORTION OF UNDISTURBED LOCAL LUNAR SURFACE, A LUNAR ROCK, AND AN EXTENSIVELY TRENCHED AREA OF THE LUNAR SURFACE. DATA WERE OBTAINED DURING THE FIRST AND SECOND LUNAR DAYS, JANUARY 12 TO 23, 1968, AND FEBRUARY 13 TO 20, 1968.

DATA SET NAME- ALPHA-SCATTERING DATA ON MAGNETIC TAPE

NSSDC ID 68-001A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 01/12/68 TO 01/23/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE BEST ALPHA-SCATTERING DATA OBTAINED FROM THE EXPERIMENT. THE DATA INCLUDED COVER STOWED, BACKGROUND, AND THREE LUNAR SAMPLE OPERATIONS ON THE FIRST LUNAR DAY. THE DATA ARE CONTAINED ON TWO 800-BPI, 7-TRACK, BINARY MAGNETIC TAPES GENERATED ON AN IBM 7094 COMPUTER.

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SPACECRAFT NAME- OGO 5  
OTHER NAMES- OGO-E, EGO 5, EOGO 5, 1968-014A  
LAUNCH DATE- 03/04/68 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL  
AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 611 KG  
ORBIT TYPE- GEOCENTRIC EPOCH- 03/04/68 ORBIT PERIOD- 3796 MIN.  
APOGEE-148228. KM ALT PERIGEE- 232. KM ALT INCLINATION- 31.1 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 5 SPACECRAFT, THE FIFTH OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS IN ORDER TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET AND TO DEVELOP AND OPERATE A STANDARDIZED OBSERVATORY-TYPE SPACECRAFT. OGO 5 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS EARTH POINTING (+Z), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS. THE OPEP'S WERE MOUNTED ON AND COULD ROTATE ABOUT AN AXIS THAT WAS PARALLEL TO THE Z AXIS AND THAT WAS ATTACHED TO THE MAIN BODY. AT LAUNCH, THE LOCAL TIME OF APOGEE WAS 0944 HR. OGO 5 CARRIED 25 EXPERIMENTS. SEVENTEEN OF THESE WERE PARTICLE STUDIES, AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EACH OF THE FOLLOWING TYPES OF EXPERIMENTS -- RADIO ASTRONOMY, UV SPECTRUM, LYMAN-ALPHA, SOLAR X RAY, PLASMA WAVES, AND ELECTRIC FIELD. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, AND 64 KBS DEPENDING ON THE DISTANCE FROM THE SPACECRAFT TO THE EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDE-BAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDE-BAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. AS OF MARCH 1971, DATA ARE STILL BEING ACQUIRED FROM 100 PERCENT OF THE ORBITAL PATH, AND THE SATELLITE IS PERFORMING NORMALLY.

EXPERIMENT NAME- UCLA TRIAXIAL FLUXGATE MAGNETOMETER NSSDC ID 68-014A-14

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

INVESTIGATORS- P.J. COLEMAN, JR., U OF CALIFORNIA, LA , LOS ANGELES, CALIF.  
T.A. FARLEY, U OF CALIFORNIA, LA , LOS ANGELES, CALIF.  
D.L. JUDGE, USC , LOS ANGELES, CALIF.  
C. RUSSELL, U OF CALIFORNIA, LA , LOS ANGELES, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A TRIAXIAL FLUXGATE MAGNETOMETER MOUNTED ON A 6.1-M BOOM. THE RANGE OF EACH SENSOR WAS MINUS TO PLUS 16 GAMMAS, WITH .125-GAMMA DIGITIZATION WINDOWS. FOR A GIVEN AMBIENT FIELD, A KNOWN OFFSET FIELD COULD BE APPLIED TO THE SENSOR BY A SURROUNDING CURRENT-CARRYING COIL. IN THIS WAY, AMBIENT FIELDS OF MINUS TO PLUS 64,000 GAMMAS PER AXIS WERE MEASURABLE WITH .125-GAMMA DIGITIZATION ACCURACY. THE SENSOR OUTPUT SIGNALS WERE PASSED THROUGH A FILTER THAT REMOVED FREQUENCY COMPONENTS HIGHER THAN THE SAMPLING FREQUENCY. THE FILTERED SIGNALS WERE THEN SAMPLED IN REAL TIME AT 4, 32, OR 256 VECTOR MEASUREMENTS PER SECOND, DEPENDING ON THE SATELLITE BIT RATE, AND AT 4 VECTOR MEASUREMENTS PER SECOND IN THE TAPE RECORDED CHANNEL. AS THE INSTRUMENT SHIFTED OFFSET FIELD RANGES, THE FIRST SIX DATA POINTS TAKEN AFTER THE SHIFT WERE AFFECTED IN AN UNDERSTOOD, AND THEREFORE CORRECTABLE, WAY. ALSO, THE INSTRUMENT HOUSING WAS EQUIPPED WITH AN ELECTRIC HEATER THAT INTRODUCED A CORRECTABLE OFFSET FIELD WHEN IT CAME ON. FURTHER, THE ZERO OFFSET ON EACH SENSOR DRIFTED SLOWLY. BY USING SIMULTANEOUS FLUXGATE AND RUBIDIUM MAGNETOMETER DATA FROM THE GSFC EXPERIMENT, THIS OFFSET CORRECTION COULD BE DETERMINED WITHIN PLUS OR MINUS 0.5 GAMMA. THE INSTRUMENT CONTINUES TO RETURN USEFUL DATA.

DATA SET NAME- ONE-MIN AVERAGED VECTOR MAGNETIC FIELD  
DATA ON MICROFILM

NSSDC ID 68-014A-14A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/05/68 TO 03/03/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET, ON NINE REELS OF 35-MM MICROFILM, CONTAINS ALL EXISTING DATA FOR THE TIME PERIOD CITED. THE DATA ARE PRESENTED AS 1-MIN AVERAGED VECTOR (CARTESIAN) COMPONENTS AND AVERAGED MAGNITUDE, WITH 5 HR OF DATA PER FRAME IN THREE SEPARATE COORDINATE SYSTEMS -- SPACECRAFT BODY COORDINATES, GEOCENTRIC SOLAR ECLIPTIC COORDINATES, AND GEOCENTRIC SOLAR MAGNETOSPHERIC COORDINATES. IN ADDITION, 1-MIN VALUES OF THE RMS FLUCTUATION AMPLITUDE FOR THE SIGNAL BETWEEN 0.07 HZ AND THE SAMPLING FREQUENCY ARE PRESENTED FOR EACH AXIS AND FOR THE FIELD MAGNITUDE. PLOTTED ON THE SAME FRAME IS A MEASURE OF THE NUMBER OF GOOD DATA POINTS THAT WERE USED TO GENERATE EACH AVERAGE. A CENTRAL PROCESSING PROGRAM HAS ATTEMPTED TO REMOVE OR CORRECT IDENTIFIABLE BAD DATA, AND, FOR THE MOST PART, THE DATA ARE CLEAN AND RELIABLE TO WITHIN PLUS OR MINUS 0.5 GAMMA PER COMPONENT FOR FIELD MAGNITUDE AND PLUS OR MINUS 0.063 GAMMA FOR RELATIVE CHANGES. RECEIPT OF ADDITIONAL DATA BY NSSDC IS ANTICIPATED.

EXPERIMENT NAME- PLASMA WAVE DETECTOR

NSSDC ID 68-014A-24

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

INVESTIGATORS- G.M. CROOK, TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.  
F.L. SCARF, TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.  
R.W. FREDRICKS, TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.  
I.M. GREEN, TRW SYSTEMS GROUP, REDONDO BEACH, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE PLASMA WAVE DETECTOR INCLUDED FIVE ELECTRIC DIPOLES AND THREE ORTHOGONAL SEARCH-COIL MAGNETOMETERS MOUNTED ON A 6.7-M BOOM. THE THREE 0.5-M-LONG ORTHOGONAL ELECTRIC DIPOLES WERE NORMAL TO THE PLANES OF THE MAGNETOMETERS. EACH OF THE ORTHOGONAL COMPONENTS OF THE DIPOLE AND MAGNETOMETER WAS SAMPLED SIMULTANEOUSLY FOR 9.2 SEC THROUGH 15-PERCENT BANDPASS FILTERS IN THE FOLLOWING SEQUENCE -- 0.56, 1.3, 3.0, 7.35, 14.5, 30.0, AND 70.0 KHZ FOR EACH DIPOLE CONCURRENT WITH 0.56, 0.56, 0.56, 0.56, 70.0, 70.0, AND 70.0 KHZ FOR EACH MAGNETOMETER. REPEAT TIME FOR THIS SEQUENCE WAS 3.26 MIN. ONBOARD AUTOCORRELATION BETWEEN EACH E AND B MEASUREMENT WAS PERFORMED. THE REMAINING TWO BOOM-MOUNTED DIPOLES WERE COLINEAR, DIFFERING ONLY IN LENGTH. EACH DIPOLE WAS MONITORED THROUGH A 200-HZ 10-PERCENT FILTER FOR 2 SEC ONCE EVERY 9.2 SEC. IN ADDITION TO THE DIGITAL DATA, 1- TO 22-KHZ ELECTRIC FIELD DATA TAKEN FROM ONE MAIN DIPOLE AND YIELDING POWER SPECTRUM INFORMATION FOR THAT AXIS WERE CONTINUOUSLY MONITORED BY A SPECIAL PURPOSE ANALOG TELEMETRY SYSTEM. THRESHOLD SENSITIVITY OF THESE MEASUREMENTS WAS TELEMETERED WITH THE DIGITAL DATA. INTENSE EMISSIONS BELOW 1 KHZ AND ABOVE 22 KHZ MAY STILL BE DETECTABLE. THE EXPERIMENT HAS OPERATED NORMALLY, BUT MUCH OF THE DATA RETURNED AFTER APRIL 1968 IS OF POOR QUALITY DUE TO A TRANSMITTER FAILURE.

DATA SET NAME- ORIGINAL ELECTRIC FIELD SONOGRAMS ON  
MICROFILM

NSSDC ID 68-014A-24A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/27/68 TO 09/15/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF NINE REELS OF 35-MM MICROFILM CONTAINING ELECTRIC FIELD SONOGRAMS GENERATED BY THE EXPERIMENTER FROM ANALOG DATA. THE DATA COVER AN AVERAGE OF 3 HR PER DAY FOR 8 DAYS INTERSPERSED BETWEEN MARCH 27, 1968, AND SEPTEMBER 15, 1968. THE DATA WERE PROCESSED AT A RATE OF 16 SEC PER INCH. THE FREQUENCY INTERVALS INCLUDED IN THE SET ARE 0 TO 2.5, 0 TO 5, 0 TO 10, 5 TO 10, 0 TO 20, AND 10 TO 30 KHZ, WITH THE 0- TO 5-, 0- TO 10-, AND 0- TO 20-KHZ INTERVALS PRESENTED MOST OFTEN. THE ANALOG DATA USED TO GENERATE THESE SONOGRAMS ARE FROM ONE AXIS OF THE THREE ORTHOGONAL DIPOLES OF THE TRW PLASMA WAVE DETECTOR. SENSITIVITY CALIBRATION OF THE ELECTRIC FIELD AMPLITUDE VS FREQUENCY INFORMATION IS NOT INCLUDED IN THIS DATA SET.

DATA SET NAME- ANALOG ELECTRIC FIELD SONOGRAM DATA  
TAPES AT TRW

NSSDC ID 68-014A-24B

AVAILABILITY OF DATA SET- DATA AVAILABLE FROM EXPERIMENTER

TIME SPAN OF DATA- 03/05/68 TO --/--/--

DATA SET BRIEF DESCRIPTION

ANALOG DATA FROM THE SPECIAL PURPOSE BROADBAND TELEMETRY, IN ORIGINAL FORM

ON MAGNETIC TAPE, ARE AVAILABLE THROUGH TRW. THESE DATA ARE BEING USED TO GENERATE THE ANALOG ELECTRIC FIELD SONOGRAMS (DATA SET 68-014A-24A) AT NSSDC. BECAUSE THE EQUIPMENT REQUIRED TO GENERATE THIS MICROFILM IS SOMEWHAT SPECIALIZED AND NOT GENERALLY AVAILABLE TO A POTENTIAL USER, THE EXPERIMENTER HAS AGREED TO PROCESS INTO SONOGRAMS REASONABLE AMOUNTS OF DATA FOR SPECIFIC INTERVALS NOT COVERED IN DATA SET 68-014A-24A, IN RESPONSE TO REQUESTS MADE THROUGH THE DATA CENTER, WHILE FUNDING IS AVAILABLE TO DO SO. AN INDEX OF ALL AVAILABLE DATA FROM MARCH 5, 1968, THROUGH OCTOBER 16, 1969, IS CONTAINED ON ONE REEL OF 16-MM MICROFILM AT NSSDC. LATER DATA ARE AVAILABLE, BUT NSSDC DOES NOT HAVE AN INDEX OF THESE DATA AT THE PRESENT TIME.

DATA SET NAME- TABULATED ELECTRIC AND MAGNETIC WAVE  
ENVELOPES ON MICROFILM

NSSDC ID 68-014A-24C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 03/11/68 TO 03/09/70

#### DATA SET BRIEF DESCRIPTION

THESE DATA ARE CONTAINED ON FOUR REELS OF COMPUTER GENERATED 35-MM MICROFILM LISTINGS MADE AT TRW. THE MICROFILM CONTAINS NO DATA OF QUESTIONABLE VALIDITY. THE MAXIMUM, MINIMUM, AVERAGE, AND STANDARD DEVIATIONS OF ALL THE ELECTRIC AND MAGNETIC FIELD DIGITAL DATA (SCALAR SUM OVER THREE AXES OF FIELD COMPONENT MAGNITUDES) ARE GIVEN FOR EACH FREQUENCY CHANNEL AND FOR EACH 3.26-MIN EXPERIMENT CYCLE AND ARE TABULATED AS FUNCTIONS OF TIME. THESE DATA INDICATE THE OMNIDIRECTIONAL NOISE AMPLITUDE IN VARIOUS DISCRETE FREQUENCY CHANNELS. THE NUMBER OF DATA POINTS USED IN EACH CALCULATION IS INCLUDED, AND THESE NUMBERS CAN BE USED TO DETERMINE THE DATA QUALITY.

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SPACECRAFT NAME- PIONEER 9

NSSDC ID 68-100A

OTHER NAMES- PIONEER-D, PL-684K, 1968-100A

LAUNCH DATE- 11/08/68 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 63.4 KG

ORBIT TYPE- HELIOCENTRIC EPOCH- 11/08/68 ORBIT PERIOD- 297.6 DAYS  
APOGEE- .9905 AU RAD PERIGEE- .7542 AU RAD INCLINATION-.086509 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

PIONEER 9 WAS THE FOURTH IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY

(RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, THE INTERPLANETARY MAGNETIC FIELD, COSMIC DUST, AND ELECTRIC FIELDS. ALSO, A NEW CODING PROCESS WAS IMPLEMENTED FOR PIONEER 9. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED AT THE TWO HIGHEST BIT RATES, ANOTHER WAS USED AT THE THREE LOWEST BIT RATES, AND THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE REAL TIME, TELEMETRY STORE, DUTY CYCLE STORE, AND MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME PERIOD BETWEEN WHICH SUCCESSIVE FRAMES WERE COLLECTED AND STORED COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS OF UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. PERFORMANCE OF THE SPACECRAFT HAS BEEN GOOD. THE NEW CODING PROCESS HAS INCREASED THE COMMUNICATIONS RANGE OF THE SATELLITE AT EACH BIT RATE. DATA RECEPTION HAS BEEN CONTINUOUS FROM LAUNCH TO PRESENT (JUNE 1971).

EXPERIMENT NAME- PLASMA PROBE (AMES RESEARCH CENTER)

NSSDC ID 68-100A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

INVESTIGATORS- J.H. WOLFE, NASA-ARC, MOFFETT FIELD, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

#### EXPERIMENT BRIEF DESCRIPTION

A TRUNCATED HEMISPHERICAL ELECTROSTATIC ANALYZER (120 DEG TOTAL PARALLEL-PLATE CURVATURE) WITH THREE CONTIGUOUS CURRENT COLLECTORS WAS USED TO STUDY THE DIRECTIONAL INTENSITY OF THE ELECTRONS AND POSITIVE IONS IN THE SOLAR WIND. IONS WERE DETECTED IN 30 LOGARITHMICALLY SPACED ENERGY PER UNIT CHARGE ( $E/Q$ ) STEPS FROM 150 TO 15,000 V. THERE WAS AN ELECTRON MODE OF OPERATION IN WHICH ELECTRONS WERE MEASURED IN 14 LOGARITHMICALLY SPACED  $E/Q$  STEPS RANGING FROM 12 TO 1000 V. THERE WAS ALSO A ZERO  $E/Q$  OR BACKGROUND STEP. IN OPERATION, THE ELECTRONS WERE MEASURED FIRST, THEN BACKGROUND, AND THEN THE IONS. THE THREE COLLECTORS MEASURED PARTICLES INCIDENT FROM THREE DIFFERENT CONTIGUOUS ANGULAR INTERVALS RELATIVE TO THE SPACECRAFT EQUATORIAL PLANE (SAME AS THE ECLIPTIC PLANE). TWO COLLECTORS MEASURED FLUX FROM 10 TO 85 DEG ON EITHER SIDE OF THE SPACECRAFT EQUATORIAL PLANE, AND THE THIRD MEASURED FLUX IN A 20-DEG INTERVAL CENTERED ON THE SPACECRAFT EQUATORIAL PLANE. AS THE SPACECRAFT WAS SPINNING, FLUXES WERE MEASURED IN 23 POSSIBLE 2-13/16-DEG-WIDE AZIMUTHAL ANGULAR SECTORS. SEVENTEEN OF THESE



SECTORS WERE CONTIGUOUS AND BRACKETED THE SOLAR DIRECTION (AS DETERMINED BY REFERENCING THE NORMAL TO THE INSTRUMENT APERTURE TO THE SPACECRAFT SUN-SENSOR PULSE). THE REMAINING SIX SECTORS WERE WIDELY SPACED. THE INSTRUMENT HAD TWO MODES OF OPERATION -- FULL SCAN AND MAXIMUM FLUX. IN THE FULL SCAN MODE, THE MAXIMUM FLUX WAS OBSERVED IN EACH OF THE 23 AZIMUTHAL SECTORS FOR A GIVEN COLLECTOR AT A GIVEN E/Q STEP DURING A SINGLE SPACECRAFT REVOLUTION. IN THE MAXIMUM FLUX MODE AT A GIVEN E/Q STEP, ALL THREE COLLECTORS WERE OBSERVED DURING A SINGLE SPACECRAFT REVOLUTION, AND THE MAXIMUM FLUX SEEN DURING THIS TIME WAS RETAINED ALONG WITH THE NUMBER OF THE COLLECTOR WHICH OBSERVED IT AND THE AZIMUTHAL DIRECTION OF THE OBSERVATION. AT THE HIGH BIT RATES (512 BPS AND 256 BPS), ALTERNATING FULL SCAN AND MAXIMUM FLUX MODE MEASUREMENTS WERE TAKEN FOR COLLECTOR NO. 1 FOR EACH OF THE 45 (14 ELECTRON, ONE BACKGROUND, AND 30 ION) E/Q STEPS. THE PROCESS WAS THEN REPEATED FOR COLLECTORS 2 AND 3. THUS, IN A FULL CYCLE OF HIGH BIT RATE DATA, FULL SCAN MODE MEASUREMENTS WERE MADE FOR ALL THREE COLLECTORS AT 45 E/Q STEPS, AS WELL AS THREE SETS OF MAXIMUM FLUX MODE MEASUREMENTS FOR THE 45 E/Q STEPS. AT THE LOW BIT RATES (64 BPS, 16 BPS, AND 8 BPS), THE MAXIMUM FLUX MODE ALONE WAS USED. THUS, NO AZIMUTHAL DISTRIBUTIONS WERE MEASURED. THE HIGH BIT RATE DATA WERE GATHERED ONLY IN THE FIRST FEW MONTHS OF THE MISSION. THE INSTRUMENT HAS WORKED WELL FROM LAUNCH TO PRESENT (JUNE 1971).

DATA SET NAME- PLOTS OF ANALYZED PLASMA PARAMETERS ON  
MICROFILM

NSSDC ID 68-100A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/08/68 TO 03/29/69

#### DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED PLOTS OF THE FOLLOWING SOLAR WIND PARAMETERS -- (1) PROTON NUMBER DENSITY (PROTONS/CUBIC CM), (2) AZIMUTH (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX FOR IONS (DEG), (3) BULK VELOCITY (KM/SEC), (4) POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG), (5) PROTON TEMPERATURE AND HELIUM TEMPERATURE (DEG), (6) HELIUM/HYDROGEN RATIO (NUMBER OF HELIUM IONS/CUBIC CM/NUMBER OF PROTONS/CUBIC CM), (7) ELECTRON TEMPERATURE (DEG K), AND (8) TWO INDICATORS OF THE ANISOTROPY IN THE SOLAR PLASMA ION TEMPERATURE DISTRIBUTION. THE DATA ARE CONTAINED ON FOUR REELS OF 16-MM MICROFILM AND HAVE A 90 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

EXPERIMENT NAME- TWO-FREQUENCY BEACON RECEIVER

NSSDC ID 68-100A-03

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

INVESTIGATORS- V.R. ESHLEMAN, STANFORD U , PALO ALTO, CALIF.  
T.A. CROFT, STANFORD U , PALO ALTO, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED FROM A 4.6-M STEERABLE PARABOLIC ANTENNA AT STANFORD UNIVERSITY TO THE TWO-FREQUENCY RADIO RECEIVER ON THE SPACECRAFT. THE HIGH-FREQUENCY SIGNAL SERVED AS A REFERENCE SIGNAL SINCE ITS PROPAGATION TIME WAS NOT APPRECIABLY DELAYED. THE LOW-FREQUENCY SIGNAL WAS DELAYED IN PROPORTION TO THE TOTAL ELECTRON CONTENT IN THE PROPAGATION PATH. ON THE SPACECRAFT, A PHASE LOCKED RECEIVER COUNTED THE BEAT FREQUENCY ZERO CROSSINGS OF THE RECEIVED SIGNALS TO OBTAIN MEASUREMENTS OF PHASE-PATH DIFFERENCES. DIFFERENTIAL DELAY OF THE GROUP VELOCITY WAS ALSO OBSERVED, AND THESE VALUES WERE TELEMETERED TO THE GROUND STATION. FROM CALCULATED TOTAL ELECTRON CONTENT VALUES, THE IONOSPHERIC EFFECT (UP TO A SELECTED ALTITUDE OBTAINED FROM OTHER EXPERIMENTAL TECHNIQUES) WAS SUBTRACTED TO PRODUCE DATA DESCRIBING THE INTERPLANETARY ELECTRON CONTENT OF THE SOLAR WIND AND ITS VARIATIONS. THE EXPERIMENT HAS OPERATED NOMINALLY FROM LAUNCH TO THE PRESENT (MARCH 1971). FOR SIMILAR EXPERIMENTS FOR OTHER TIME PERIODS, SEE 67-123A-03, 66-075A-04, 65-105A-04, AND 67-060A-02. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN J. GEOPHYS. RES., 71, 3325-3327, 1966, AND IN RADIO SCIENCE, VOL. 6., 55-63, 1971.

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON TAPE

NSSDC ID 68-100A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/09/68 TO 07/16/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON CNE 556-8PI, 7-TRACK, BCD MAGNETIC TAPE GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE TAPE ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04A), 7 (66-075A-04A), AND 8 (67-123A-03A) AND MARINER 5 (67-060A-02A).

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON  
CONTENT DATA ON MICROFILM

NSSDC ID 68-100A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/09/68 TO 07/16/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED AND PLOTTED HOURLY VALUES OF TOTAL

ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM GENERATED AT NSSDC FROM DATA SUPPLIED BY THE EXPERIMENTER. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04B), 7 (66-075A-04B), AND 8 (67-123A-03B) AND MARINER 5 (67-060A-02B) AND SOLAR WIND ELECTRON DENSITY PLOTS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D).

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON TAPE

NSSDC ID 68-100A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/04/69 TO 08/27/70

#### DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF HOURLY VALUES OF NORMALIZED ELECTRON NUMBER DENSITY IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES, AND THE TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE THEN NORMALIZED TO 1 AU ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. VALUES RESULTING FROM INTERPOLATION ARE FLAGGED. NO INTERPOLATED VALUES WERE RECORDED WHEN DATA GAPS EXCEEDED 4 DAYS. THIS DATA SET IS ON ONE 800-BPI, 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN ON AN IBM 7094 COMPUTER. AUXILIARY DATA ON THE TAPE INCLUDE UT AND CARRINGTON ROTATION NUMBER. DATA ARE AVAILABLE FOR ABOUT 12 HR PER DAY WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04D), 7 (66-075A-04D), AND 8 (67-123A-03C) AND MARINER 5 (67-060A-02C) ALSO APPEAR ON THIS TAPE.

DATA SET NAME- NORMALIZED DIGITAL VALUES OF SOLAR WIND  
ELECTRON DENSITY VS TIME ON MICROFILM

NSSDC ID 68-100A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/04/69 TO 08/27/70

#### DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF PLOTS OF ELECTRON DENSITY VS TIME IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT FOR THE SAME TIMES AT A NEARBY LOCATION WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES. THEN THE OBSERVED TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE

NORMALIZED TO 1 AU, ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE SATELLITE-SOLAR DISTANCE. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), AND 8 (67-123A-03D) AND HOURLY VALUES OF TOTAL ELECTRON CONTENT FROM PIONEERS 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), AND 9 (68-100A-03B) AND MARINER 5 (67-060A-02B). THIS DATA SET IS ALSO AVAILABLE ON TAPE (68-100A-03C).

EXPERIMENT NAME- PLASMA WAVE DETECTOR

NSSDC ID 68-100A-07

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

INVESTIGATORS- F.L. SCARF, TRW SYSTEMS GROUP , REDONDC BEACH, CALIF.  
I.M. GREEN, TRW SYSTEMS GROUP , REDONDC BEACH, CALIF.  
G.M. CROOK, TRW SYSTEMS GROUP , REDONDC BEACH, CALIF.  
R.W. FREDRICKS, TRW SYSTEMS GROUP , REDONCC BEACH, CALIF.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

ELECTROSTATIC AND ELECTROMAGNETIC PLASMA WAVES WERE MEASURED IN THE SOLAR WIND NEAR 1 AU USING AN UNBALANCED ELECTRIC DIPOLE ANTENNA. THE 423-MHZ STANFORD UNIVERSITY ANTENNA, WHICH SERVED AS THE SENSOR, WAS CAPACITIVELY COUPLED TO THREE TELEMETRY CHANNELS. CHANNEL 1 WAS A 15-PERCENT BANDPASS FILTER CENTERED AT 400 HZ. CHANNEL 2 WAS A 15-PERCENT BANDPASS FILTER CENTERED AT 30 KHZ. THESE CHANNELS WERE EACH SAMPLED 64 TIMES PER TELEMETRY SEQUENCE. CHANNEL 3 WAS A BROADBAND 100-HZ TO 100-KHZ CHANNEL. THE BROADBAND CHANNEL WAS FED INTO A COUNT RATE METER THAT MEASURED THE NUMBER OF POSITIVE GOING PULSES PER UNIT TIME HAVING AMPLITUDES LARGE ENOUGH TO CROSS THE TRIGGER LEVEL PRESENT. THE TRIGGER LEVEL WAS VARIED THROUGH EIGHT STEPS EIGHT TIMES PER TELEMETRY SEQUENCE. THE TRIGGER LEVELS, TOGETHER WITH THE COUNT RATE AT EACH LEVEL, GAVE A MEASURE OF THE BROADBAND POWER SPECTRUM. THE TELEMETRY SEQUENCE WAS REPEATED OVER TIME INTERVALS FROM 7 MIN 28 SEC TO 472 MIN 52 SEC, WITH MOST OF THE DATA OBTAINED AT 59 MIN 44 SEC PER TELEMETRY SEQUENCE DURING THE FIRST YEAR OF ACQUISITION. THIS IMPLIES THAT ONE EIGHT-STEP PULSE HEIGHT ANALYSIS AND EIGHT 400-HZ AND 30-KHZ MEASUREMENTS WERE MADE EVERY 7 MIN 28 SEC. THE EXPERIMENT CONTINUES TO RETURN USEFUL DATA (MARCH 1971).

DATA SET NAME- PLOTS OF HOURLY AVERAGED BROADBAND AND  
400-HZ WAVE LEVELS

NSSDC ID 68-100A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/08/68 TO 02/27/69

DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF FIVE EXPERIMENTER GENERATED HOURLY AVERAGED PLOTS OF THE BROADBAND WAVE LEVEL AND THE 400-HZ WAVE LEVEL, BOTH IN MILLIVOLTS, FROM THE TRW ELECTRIC FIELD EXPERIMENT ON PIONEER 9. THE DATA ARE ABOUT 80 PERCENT COMPLETE, AND GAPS CURRENTLY EXISTING IN THE DATA WILL EVENTUALLY BE FILLED IN. FOR CONVENIENCE, THE HOURLY AVERAGED AP INDEX HAS BEEN INCLUDED WITH THESE DATA.

DATA SET NAME- FINE TIME SCALE ELECTRIC FIELD SPECTRUM  
DATA ON MICROFILM

NSSDC ID 68-100A-078

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 11/08/68 TO 03/06/69

DATA SET BRIEF DESCRIPTION

THESE ORIGINAL 35-MM MICROFILM PLOTS WERE GENERATED BY NASA-ARC FOR TRW. THEY ARE ONE OF THREE REDUCED DATA OUTPUTS FROM THE PLASMA WAVE EXPERIMENT. INCLUDED ARE THE COUNT RATES FOR EACH OF THE EIGHT LEVELS IN THE PULSE HEIGHT ANALYSIS, THE 400-HZ AND 30-KHZ WAVE AMPLITUDES, AND CALCULATED STATISTICS BASED ON THESE MEASUREMENTS. THE STATISTICS INCLUDE THE AVERAGE STANDARD DEVIATION AND THE MAXIMUM AND MINIMUM OF THE EIGHT 400-HZ WAVE AMPLITUDES AND OF THE EIGHT 30-KHZ WAVE AMPLITUDES OBSERVED DURING THE EIGHT-POINT PULSE HEIGHT ANALYSIS. EPHEMERIS DATA ARE ALSO INCLUDED. DATA WILL BE ADDED TO THIS DATA SET AS THEY BECOME AVAILABLE.

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SPACECRAFT NAME- APOLLO 8  
OTHER NAMES- PL-684M, 1968-118A

NSSDC ID 68-118A

LAUNCH DATE- 12/21/68 DATE LAST SCIENTIFIC DATA RECORDED- 12/27/68

AGENCY- NASA-QMSF SPACECRAFT WEIGHT IN ORBIT- 9979 KG

ORBIT TYPE- SELENOCENTRIC EPOCH- 12/24/68 ORBIT PERIOD- 88 MIN.  
APOGEE- 1851 KM RAD PERIGEE- 1848 KM RAD INCLINATION- 12 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS THE FIRST OF THE APOLLO SERIES TO SUCCESSFULLY ORBIT THE MOON. THE MISSION ACHIEVED OPERATIONAL EXPERIENCE AND TESTED THE APOLLO COMMAND MODULE SYSTEMS. THE CREW PHOTOGRAPHED THE LUNAR SURFACE, BOTH FAR SIDE AND NEAR SIDE, OBTAINING INFORMATION ON TOPOGRAPHY AND LANDMARKS AS WELL AS OTHER SCIENTIFIC INFORMATION NECESSARY FOR FUTURE APOLLO LANDINGS. THE SPACECRAFT WAS LAUNCHED ON DECEMBER 21, 1968, AND WAS PLACED IN AN ELLIPTICAL LUNAR ORBIT AT 65 HR 8 MIN GROUND ELAPSED TIME (G.E.T.) FOR TWO ORBITS. IT WAS LATER PLACED IN A NEAR-CIRCULAR LUNAR ORBIT OF 59.7 BY 60.7 N.M. FOR EIGHT ORBITS. THE MISSION WAS CONSIDERED NOMINAL AND WAS COMPLETED

ON DECEMBER 27, 1968, AT 147 G.E.T.

EXPERIMENT NAME- APOLLO 8 PHOTOGRAPHIC STUDIES

NSSDC ID 68-118A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA HEADQUARTERS

INVESTIGATORS- R.J. ALLENBY, NASA HEADQUARTERS , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 12/26/68

EXPERIMENT BRIEF DESCRIPTION

THE APOLLO 8 MISSION UTILIZED TWO 70-MM HASSELBLAD CAMERAS WITH TWO 80-MM LENSES, A 250-MM LENS, AND ASSOCIATED EQUIPMENT SUCH AS FILTERS, RINGSIGHT, SPOTMETER, AND AN INTERVALOMETER FOR STEREO STRIP PHOTOGRAPHY. IT ALSO CARRIED A 16-MM MAURER CAMERA WITH 200-, 75-, 18-, AND 5-MM LENSES, A RIGHT-ANGLE MIRROR, AND A BORESIGHT BRACKET. THE PURPOSE OF THIS PHOTOGRAPHIC EQUIPMENT WAS (1) TO ACQUIRE VERTICAL AND OBLIQUE OVERLAPPING PHOTOGRAPHS OF THE LUNAR FAR SIDE, (2) TO PHOTOGRAPH 'TARGETS OF OPPORTUNITY,' AND (3) TO RECORD OPERATIONAL ACTIVITIES. SEVEN MAGAZINES OF 70-MM FILM AND FIVE MAGAZINES OF 16-MM FILM WERE USED FOR LUNAR PHOTOGRAPHY. A COMPLETE DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN A DATA ANNOUNCEMENT BULLETIN, NSSDC 69-06, AVAILABLE AT NSSDC BY REQUEST.

DATA SET NAME- COLOR MASTER POSITIVE 70-MM PHOTOS

NSSDC ID 68-118A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 12/22/68 TO 12/26/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE MAGAZINES CONTAINING 276 COLOR MASTER POSITIVES OF LUNAR TERRAIN PHOTOGRAPHS THAT WERE PRODUCED FROM THE ORIGINAL 70-MM EKTACHROME COLOR REVERSAL FILM USED WITH THE HASSELBLAD CAMERA. TWO MAGAZINES CONTAIN 230 FRAMES PREPARED FROM SO-368 FILM, AND ONE MAGAZINE CONTAINS 46 FRAMES PREPARED FROM SO-121 FILM.

DATA SET NAME- COLOR 'B' WIND MASTER POSITIVE 16-MM  
PHOTOS

NSSDC ID 68-118A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 12/22/68 TO 12/26/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS CONTINUAL LUNAR PANORAMA PHOTOGRAPHY ON ONE 100-FT

REEL OF 16-MM POSITIVE FILM GENERATED FROM SO-368 EKTACHROME COLOR REVERSAL FILM. THE REEL WAS COMPILED FROM FIVE MAGAZINES THAT ORIGINALLY CONTAINED 100 FT OF FILM EACH. THE CABIN AND EARTH PHOTOGRAPHY WERE REMOVED FROM THIS DATA SET.

DATA SET NAME- B/W PHOTOMETRIC MASTER POSITIVE 70-MM  
PHOTOS

NSSDC ID 68-118A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 12/22/68 TO 12/26/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 588 FRAMES OF LUNAR PHOTOGRAPHY ON ONE REEL OF 70-MM BLACK AND WHITE MASTER POSITIVE FILM. MOST OF THESE PHOTOGRAPHS ARE OF 'TARGETS OF OPPORTUNITY.' THE REEL WAS COMPILED FROM THREE BLACK AND WHITE PANATOMIC-X AERIAL FILM MAGAZINES AND ONE KODAK TYPE 2485 HIGH-SPEED MASTER POSITIVE BLACK AND WHITE FILM MAGAZINE. THE ORIGINAL 70-MM PHOTOGRAPHY WAS PROCESSED ON A NIAGARA PRINTER TO PRODUCE A SET OF PHOTOGRAPHS SUITABLE FOR DETAILED PHOTOMETRIC AND PHOTOGRAMMETRIC INVESTIGATIONS.

DATA SET NAME- B/W LOGETRONIC POSITIVE 70-MM PHOTOS

NSSDC ID 68-118A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 12/22/68 TO 12/26/68

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS REPRODUCTIONS OF THE SAME PHOTOS FOUND IN DATA SET 68-118A-01C. THE FILMS WERE PROCESSED ON A LOGETRONIC SP-1070 CONTACT PRINTER USING EXPOSURE CONTROL AND DODGING TECHNIQUES. FOR THIS SET OF PICTURES, THE OVERALL CONTRAST IS BETTER THAN THOSE PRODUCED ON THE NIAGARA PRINTER, BUT THERE IS A SLIGHT LOSS IN RESOLUTION.

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SPACECRAFT NAME- ISIS 1

NSSDC ID 69-009A

OTHER NAMES- PL-444C, ISIS-A, 1969-009A

LAUNCH DATE- 01/30/69

DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- CAN-NASA

SPACECRAFT WEIGHT IN ORBIT- 238.0 KG

ORBIT TYPE- GEOCENTRIC

EPOCH- 01/30/69 ORBIT PERIOD- 128 MIN.

APOGEE- 3522. KM ALT

PERIGEE- 574. KM ALT INCLINATION- 88.425 DEGREES

SPACECRAFT BRIEF DESCRIPTION

ISIS 1 WAS AN IONOSPHERIC OBSERVATORY INSTRUMENTED WITH SWEEP FREQUENCY AND

FIXED FREQUENCY IONOSPHERES, A VLF RECEIVER, ENERGETIC AND SOFT PARTICLE DETECTORS, AN ION MASS SPECTROMETER, AN ELECTROSTATIC PROBE, AN ELECTROSTATIC ANALYZER, A BEACON TRANSMITTER, AND A COSMIC NOISE EXPERIMENT. THE SOUNDER USED TWO LONG DIPOLE ANTENNAS (78.9 M AND 20.2 M LONG, RESPECTIVELY). THE SATELLITE WAS SPIN STABILIZED AT ABOUT 2.9 RPM AFTER ANTENNA DEPLOYMENT. SCME CONTROL COULD BE EXERCISED OVER THE SPIN RATE AND ATTITUDE BY USING MAGNETICALLY INDUCED TORQUES TO CHANGE THE SPIN RATE AND TO PRECESS THE SPIN AXIS. A TAPE RECORDER WITH 1-HR CAPACITY WAS INCLUDED ON THE SATELLITE. THE SATELLITE COULD BE PROGRAMMED TO TAKE RECORDED OBSERVATIONS FOR FOUR DIFFERENT TIME PERIODS FOR EACH FULL RECORDING PERIOD. THE RECORDER WAS DUMPED ONLY AT OTTAWA. FOR NON-TAPE-RECORDED OBSERVATIONS, DATA FOR THE SATELLITE AND SUBSATELLITE REGIONS COULD BE OBSERVED AND TELEMETERED WHEN THE SPACECRAFT WAS IN THE LINE OF SIGHT OF TELEMETRY STATIONS. THE SELECTED TELEMETRY STATIONS WERE IN AREAS THAT PROVIDED PRIMARY DATA COVERAGE NEAR THE 80-DEG W MERIDIAN, PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, ENGLAND, NORWAY, INDIA, JAPAN, AND CENTRAL AFRICA. DATA WERE RECORDED FOR ABOUT 6 TO 9 HR PER DAY. NO TAPE RECORDED DATA ARE AVAILABLE AFTER JANUARY 30, 1970, BECAUSE OF FAILURE OF THE RECORDER. HOWEVER, GOOD DATA ARE STILL BEING RECEIVED AS OF MAY 1971.

DATA SET NAME- GSFC EXTENDED WORLD MAPS ON MICROFILM

NSSDC ID 69-009A-00C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/01/69 TO 12/31/70

#### DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITION AND SUPPORTING INFORMATION FOR EACH MINUTE OF GMT. THE INFORMATION PROVIDED IN THE LISTINGS INCLUDES LOCAL SOLAR TIME, GEODETIC LOCATION, SEVERAL VARIETIES OF MAGNETIC FIELD REFERENCED LOCATION, AND SUN POSITION. DATA ARE ALSO GIVEN FOR SPECIAL TIMES (EQUATOR CROSSINGS, NORTHERNMOST AND SOUTHERNMOST POINTS, SUNLIGHT ENTRANCE AND EXIT, ETC.). THE DATA ARE AVAILABLE ON SIXTEEN 100-FT REELS OF 35-MM MICROFILM (AS OF APRIL 1971).

EXPERIMENT NAME- SWEEP FREQUENCY IONOSPHERE

NSSDC ID 69-009A-01

ORIGINAL EXPERIMENT INSTITUTION- COMM RESEARCH CENTRE

INVESTIGATORS- G.L. NELMS, COMM RESEARCH CENTRE , OTTAWA, ONTARIO, CANADA  
J.E. JACKSON, NASA-GSFC , GREENBELT, MD.  
L. COLIN, NASA-ARC , MOFFETT FIELD, CALIF.  
J.W. KING, RSRS , SLOUGH, BUCKS, ENGLAND  
R.B. NORTON, NOAA , BOULDER, COLO.



DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE ISIS 1 IONOSONDE WAS A RADIO TRANSMITTER/RECEIVER THAT RECORDED THE TIME DELAY BETWEEN A TRANSMITTED AND A RETURNED RADIO FREQUENCY PULSE. A CONTINUUM OF FREQUENCIES BETWEEN .1 AND 20 MHZ WAS SAMPLED ONCE EVERY 19 OR 29 SEC, AND ONE OF SIX SELECTED FREQUENCIES WAS ALSO SCUNDED FOR A PERIOD OF 3 TO 5 SEC DURING THIS 19- OR 29-SEC PERIOD. IN ADDITION TO THE SWEEP AND FIXED FREQUENCY MODES OF OPERATION, A MIXED MODE WAS POSSIBLE WHERE THE TRANSMITTER FREQUENCY WAS FIXED AT 0.82 MHZ WHILE THE RECEIVER SWEEP. SEVERAL VIRTUAL HEIGHT (DELAY TIME) PROFILES WERE NORMALLY OBSERVED DUE TO GROUND REFLECTIONS, PLASMA RESONANCES, BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, ETC. VIRTUAL HEIGHT AT A GIVEN FREQUENCY WAS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE PROPAGATION PATH, AND MODE OF PROPAGATION. THE STANDARD DATA FORM WAS AN IONOGRAM SHOWING VIRTUAL HEIGHT AS A FUNCTION OF FREQUENCY. TWO OTHER FORMS OF DATA WERE COMMONLY PREPARED FROM THE IONOGRAMS. THEY WERE DIGITAL FREQUENCY AND/OR VIRTUAL HEIGHT VALUES OF CHARACTERISTIC IONOSPHERIC FEATURES AND COMPUTATIONS OF ELECTRON DENSITY PROFILES. PERFORMANCE TO DATE (MARCH 1971) HAS BEEN NOMINAL.

DATA SET NAME- SWEEP FREQUENCY IONOGRAMS ON MICROFILM

NSSDC ID 69-009A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/30/69 TO 03/23/70

DATA SET BRIEF DESCRIPTION

THESE IONOGRAMS ARE REDUCED DATA PLOTS OF VIRTUAL RANGE VS FREQUENCY. THE DATA SET CONSISTS OF 586 REELS OF 35-MM MICROFILM. VIRTUAL RANGE IS A FUNCTION OF TIME DELAY OF THE REFLECTED PULSE OF EACH FREQUENCY TRANSMITTED. THESE ARE FIRST GENERATION DATA PREPARED FROM THE TELEMETRY TAPES. PROCESSING IS SCHEDULED AT ANY ONE OF THESE PROCESSING LOCATIONS -- CRC IN OTTAWA, CANADA, NOAA (FORMERLY ESSA) IN BOULDER, COLORADO, OR RSRS IN SLOUGH, BUCKS, ENGLAND. TIME CODES ARE ENTERED IN THE MARGIN OF THE MICROFILM, AND HEIGHT AND FREQUENCY MARKERS HAVE BEEN PLACED ON EACH IONOGRAM. SATELLITE EPHEMERIDES MUST BE CONSULTED TO DETERMINE POSITION AND OBSERVATION TIME. THE DATA ARE AVAILABLE TO THE EXTENT PERMITTED BY TELEMETRY STATION SCHEDULING, LOCATION OF TELEMETRY STATIONS, AND TAPE RECORDER OPERATION AND SCHEDULING. SPACECRAFT POWER, WHICH WAS ALSO AN IMPORTANT FACTOR IN DATA OBSERVATION, LIMITED SCUNDER OPERATION TO ABOUT 7 HR PER DAY, ABOUT 1 HR OF WHICH WAS FOR RECORDED DATA. PRODUCTION OF IONOGRAMS CREATES A LAG IN OBSERVATION BY ABOUT 9 MONTHS, AND RELEASE OF DATA FOR GENERAL USE CREATES A LAG IN IONOGRAM DISTRIBUTION OF 12 MONTHS. EARLY RELEASE OR PROCESSING OF SMALL NUMBERS OF IONOGRAMS IS POSSIBLE ON REQUEST. THIS DATA SET CONTINUES TO GROW, AND THE MICROFILM QUANTITIES AND TIME COVERAGE ARE VALID AS OF MARCH 22, 1971. SINCE ONLY TIME IS NOTED ON EACH IONOGRAM, SATELLITE POSITION AND RELATED INFORMATION MUST BE OBTAINED FROM ANOTHER SOURCE (SEE DATA SET 69-009A-00C).

EXPERIMENT NAME- FIXED FREQUENCY IONOSONDE

NSSDC ID 69-009A-02

ORIGINAL EXPERIMENT INSTITUTION- ESSA

INVESTIGATORS- W. CALVERT, NOAA , BOULDER, COLO.  
R.B. NORTON, NOAA , BOULDER, COLO.  
J.M. WARNOCK, NOAA , BOULDER, COLO.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE FIXED FREQUENCY SOUNDER OPERATED CONTIGUOUSLY WITH THE SWEEP FREQUENCY SOUNDER DURING ITS RETURN FROM THE HIGHEST SAMPLED FREQUENCY TO THE LOWER START FREQUENCY OF THE NEXT IONOGRAM. THE FIXED FREQUENCY WAS SELECTED FROM 0.25, 0.48, 1.00, 1.55, 4.00, OR 9.303 MMZ. THIS EXPERIMENT WAS DESIGNED TO STUDY IONOSPHERIC IRREGULARITIES OF A SMALLER SCALE THAN CAN BE DETECTED WITH THE SWEEP FREQUENCY TECHNIQUE. THESE OBSERVATIONS CAN ALSO BE USEFUL TO STUDY PLASMA RESONANCES. THE PARAMETERS MEASURED WERE VIRTUAL RANGE (A FUNCTION OF TIME DELAY OF THE REFLECTED PULSE) AND TIME (A FUNCTION OF GEOGRAPHICAL POSITION). EXPERIMENT PERFORMANCE HAS BEEN NOMINAL SINCE LAUNCH.

DATA SET NAME- FIXED FREQUENCY IONOGRAMS ON MICROFILM

NSSDC ID 69-009A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 01/30/69 TO 03/23/70

DATA SET BRIEF DESCRIPTION

THE FIXED FREQUENCY IONOGRAMS ARE CONTAINED DIRECTLY IN FRONT OF EACH SWEEP FREQUENCY IONOGRAM (69-009A-01A) ON 586 REELS OF 35-MM MICROFILM. THESE ARE REDUCED DATA PREPARED FROM THE TELEMETRY TAPE AT CRC IN OTTAWA, CANADA, NOAA IN BOULDER, COLORADO, OR RSRS IN SLOUGH, BUCKS, ENGLAND. FREQUENCY LABELS, HEIGHT MARKERS, AND TIME ARE MARKED ON THE FILM. IN ORDER TO DETERMINE SATELLITE LOCATION AND ALTITUDE, SATELLITE EPHEMERIDES MUST BE CONSULTED. THESE DATA HAVE BEEN TAKEN REGULARLY FOR ABOUT 7 HR PER DAY, FOR 3- TO 5-SEC PERIODS AT 19- OR 29-SEC INTERVALS, SINCE LAUNCH IN JANUARY 1969.

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SPACECRAFT NAME- MARINER 6

NSSDC ID 69-014A

OTHER NAMES- PL-691E, MARINER MARS 69A, 1969-014A

LAUNCH DATE- 02/24/69

DATE LAST SCIENTIFIC DATA RECORDED- 07/31/69

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT-

380 KG

ORBIT TYPE- HELIOCENTRIC

EPOCH- 02/24/69

ORBIT PERIOD- 517 DAYS

APOGEE- 1.52 AU RAD

PERIGEE- 1.0 AU RAD

INCLINATION-

0 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

MARINER 6 WAS THE SIXTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY MODE. MARINER 6 WAS ATTITUDE STABILIZED IN THREE AXES (REFERENCED TO THE SUN AND THE STAR CANOPUS). THE SPACECRAFT WAS SOLAR POWERED AND CAPABLE OF CONTINUOUS TELEMETRY TRANSMISSION. IT WAS FULLY AUTOMATIC IN OPERATION ALTHOUGH IT COULD BE REPROGRAMMED FROM EARTH DURING THE MISSION. THE SPACECRAFT WAS ORIENTED ENTIRELY TO PLANETARY DATA ACQUISITION, AND NO DATA WERE OBTAINED DURING THE TRIP TO MARS OR BEYOND MARS. MARINER 6 PASSED 3431 KM FROM MARS ON JULY 31, 1969. THE SPACECRAFT INSTRUMENTS TOOK TV IMAGES OF MARS AND MEASURED THE RADIO REFRACTIVITY AND UV AND IR EMISSIONS OF THE MARTIAN ATMOSPHERE. THE MISSION WAS A SUCCESS, AND DATA FROM IT WERE USED TO PROGRAM MARINER 7.

EXPERIMENT NAME- MARS TV CAMERA

NSSDC ID 69-014A-01

ORIGINAL EXPERIMENT INSTITUTION- CAL TECH

INVESTIGATORS- R.B. LEIGHTON, CAL TECH, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 07/31/69

#### EXPERIMENT BRIEF DESCRIPTION

TWO TELEVISION CAMERAS, ONE OF MEDIUM RESOLUTION (WIDE ANGLE) AND THE OTHER OF HIGH RESOLUTION (NARROW ANGLE), WERE PART OF THE MARINER 6 SCIENTIFIC INSTRUMENTATION. THE WIDE-ANGLE CAMERA, WHICH HAD A FIELD OF VIEW OF 11 DEG BY 14 DEG AND A FOCAL LENGTH OF 50 MM, ENCOMPASSED 100 TIMES MORE SURFACE AREA THAN THE NARROW-ANGLE CAMERA AND WAS USED ONLY FOR NEAR-ENCOUNTER PICTURES. THE NARROW-ANGLE CAMERA, WHICH WAS USED FOR BOTH NEAR- AND FAR-ENCOUNTER PICTURES, HAD A FOCAL LENGTH OF 508 MM AND PROVIDED 10 TIMES THE LINEAR RESOLUTION OF THE WIDE-ANGLE CAMERA. CAMERA SHUTTERS WERE ALTERNATED AND TIMED TO PROVIDE OVERLAPPING OF THE WIDE-ANGLE AND NARROW-ANGLE PICTURES, PROVIDING 75 PICTURES FROM THE TWO SYSTEMS -- 25 NEAR-ENCOUNTER AND 50 FAR-ENCOUNTER. THE NEAR-ENCOUNTER PICTURES WERE TAKEN BETWEEN 13 MIN 59 SEC BEFORE ENCOUNTER AND 2 MIN 55 SEC AFTER ENCOUNTER ALONG A TRACK THAT CROSSED THE EQUATORIAL ZONES OF THE PLANET AND INCLUDED MANY KNOWN LIGHT AND DARK FEATURES OF THE MARTIAN SURFACE. THE FAR-ENCOUNTER PICTURES WERE OBTAINED IN TWO SERIES OF OPERATIONS. IN THE FIRST SERIES, 33 PICTURES WERE OBTAINED BETWEEN 48 HR AND 28 HR BEFORE ENCOUNTER. IN THE SECOND SERIES, 17 PICTURES WERE OBTAINED BETWEEN 22 HR AND 7 HR FROM CLOSEST APPROACH. THE PICTURE DATA WERE ENCODED AND RECORDED WITHIN THE ONBOARD TELEVISION AND DATA STORAGE SUBSYSTEMS. FOR EACH PICTURE PRODUCED BY THE CAMERAS, THREE SEPARATE ENCODED VERSIONS WERE TRANSMITTED TO EARTH -- A COMPOSITE ANALOG VIDEO (CAV) PICTURE, A DIGITAL VIDEO (DV) PICTURE, AND AN EVERY TWENTY-EIGHTH (ETE) DIGITAL PICTURE. VIDEO

RECONSTRUCTION CONSISTED OF COMBINING THE THREE DATA STREAMS (CAV, CV, AND ETE). THIS GENERATED VIDEO DATA AS THEY EXISTED COMING OUT OF THE CAMERA HEADS. THE TELEMETERED VIDEO MAGNETIC TAPES WERE DISPLAYED ON A CRT AND PHOTOGRAPHED ON 70-MM FILM TO PRODUCE THE RAW IMAGES. THEY WERE ALSO DIGITALLY PROCESSED BY AN IBM 360/44 COMPUTER FOR ENHANCEMENT AND BY AN IBM 360/75 FOR NOISE REMOVAL TO OBTAIN THE VERSIONS CONTAINED IN DATA SETS -01C THROUGH -01H. DETAILED INFORMATION ON THE DIGITAL PROCESSING PROCEDURES CAN BE FOUND IN 'DIGITAL PROCESSING OF THE MARINER 6 AND 7 PICTURES,' T. C. RINCFLEISH ET AL., J. GEOPHYS. RES., 76, 394-417, JANUARY 1971. ACCURATE TRAJECTORY AND RELATED GEOMETRICAL DATA CAN BE FOUND IN 'MARINER MARS 1969 SIMULATED TV PICTURES (FINAL),' J. K. CAMPBELL, 1970, WHICH WAS ISSUED BY JPL.

DATA SET NAME- RAW-ANALOG NEAR-ENCOUNTER PHOTOS NSSDC ID 69-014A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 25 UNENHANCED PHOTOGRAPHS ON 70-MM POSITIVE FILM. THESE ARE ORIGINAL COPIES, I.E., DIRECT FROM THE CRT, OF THE PHOTOGRAPHS TAKEN BY BOTH THE NARROW-ANGLE AND THE WIDE-ANGLE CAMERAS. EACH PHOTOGRAPH CONTAINS A LIMITED VIEW OF THE MARTIAN SURFACE.

DATA SET NAME- RAW-ANALOG FAR-ENCOUNTER PHOTOS NSSDC ID 69-014A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/29/69 TO 07/30/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 50 UNENHANCED PHOTOGRAPHS TAKEN BY THE NARROW-ANGLE CAMERA. THESE ARE ORIGINAL COPIES ON 70-MM POSITIVE FILM, AS PHOTOGRAPHED FROM THE CRT. THE FILM WAS SUPPLIED BY THE EXPERIMENTER TEAM AT JPL. EACH PHOTOGRAPH CONTAINS A LIMITED VIEW OF THE MARTIAN SURFACE.

DATA SET NAME- NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
OPTIMAL PRESENTATION PHOTOS NSSDC ID 69-014A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS AN ENHANCED VERSION OF THE 25 NEAR-ENCOUNTER MARS

PHOTOGRAPHS IN THE ORIGINAL COMPUTER ENHANCED 70-MM NEGATIVE VERSION. IN THESE PHOTOGRAPHS, WHICH WERE PRODUCED FOR OPTIMAL PRESENTATION, THE SMALL-SCALE DETAIL WITHIN EACH FRAME WAS EMPHASIZED, CONTRAST WAS ENHANCED, SYSTEM NOISES WERE SUPPRESSED, AND GEOMETRIC DISTORTIONS WERE CORRECTED BY DIGITAL PROCESSING OF THE IMAGES ON THE SPACECRAFT AND ON THE GROUND DURING VIDEO RECONSTRUCTION AND RECTIFICATION. IMPROVEMENT OF IMAGE RESOLUTION AND SHARPENING OF FEATURES WAS A RESULT OF HIGH PASS FILTERING. THIS PROCESSING OF THE TELEVISION DATA ACHIEVES MAXIMUM QUALITY IMAGE DISPLAY FOR PHOTO INTERPRETATION.

DATA SET NAME- FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
OPTIMAL PRESENTATION PHOTOS

NSSDC ID 69-014A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/25/69 TO 07/30/69

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET IS AN ENHANCED VERSION OF 49 OF THE FAR-ENCOUNTER MARS PHOTOGRAPHS IN THE ORIGINAL COMPUTER ENHANCED 70-MM NEGATIVE VERSION. IN THESE PHOTOGRAPHS, WHICH WERE PRODUCED FOR OPTIMAL PRESENTATION, SMALL-SCALE DETAIL WITHIN EACH FRAME WAS EMPHASIZED, CONTRAST WAS ENHANCED, SYSTEM NOISES WERE SUPPRESSED, AND GEOMETRIC DISTORTIONS WERE CORRECTED BY DIGITAL PROCESSING OF THE IMAGES ON THE SPACECRAFT AND ON THE GROUND DURING VIDEO RECONSTRUCTION AND RECTIFICATION. IMPROVEMENT OF IMAGE RESOLUTION AND SHARPENING OF FEATURES WAS A RESULT OF FILTERING. THIS PROCESSING OF THE TELEVISION DATA ACHIEVES MAXIMUM QUALITY IMAGE DISPLAY FOR PHOTO INTERPRETATION.

DATA SET NAME- NEAR-ENCOUNTER PHOTOMETRICALLY  
DECALIBRATED PHOTOS

NSSDC ID 69-014A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A DECALIBRATED VERSION OF THE 25 NEAR-ENCOUNTER PHOTOGRAPHS OF MARS FROM THE MARS TELEVISION EXPERIMENT. THIS VERSION IS ON 70-MM NEGATIVE FILM AND WAS DIGITALLY PROCESSED TO REMOVE THE EFFECTS OF THE TV SYSTEM AND TO DEPICT THE ACTUAL SCENE LUMINANCE AND LARGE-SCALE ALBEDO VARIATIONS, NOT SMALL-SCALE DETAIL. THIS REPRESENTATION IS RATHER FLAT IN CONTRAST FOR ALL THE MARTIAN TERRAIN TONAL CHARACTERISTICS. THE SPACECRAFT VIDICONS WERE CALIBRATED TO DETERMINE THE RELATIONSHIP BETWEEN THE INPUT LUMINANCE AND THE CAMERA OUTPUT SIGNAL AS A FUNCTION OF POSITION IN EACH FRAME. EACH PICTURE ELEMENT WAS THEN TREATED AS A TINY PHOTOMETER WITH UNIQUE TRANSFER PROPERTIES. THE RECORDED OUTPUT SIGNAL WAS CONVERTED TO THE ACTUAL SCENE LUMINANCE, AND THE RESULT WAS STORED IN THE CORRECTED OUTPUT IMAGE FOR THESE PHOTOMETRICALLY DECALIBRATED PHOTOS.

DATA SET NAME- FAR-ENCOUNTER PHOTOMETRICALLY  
DECALIBRATED PHOTOS

NSSDC ID 69-014A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/29/69 TO 07/30/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A DECALIBRATED VERSION OF 49 OF THE FAR-ENCOUNTER PHOTOGRAPHS OF MARS FROM THE MARS TELEVISION EXPERIMENT. THIS VERSION IS ON 70-MM NEGATIVE FILM AND WAS DIGITALLY PROCESSED TO REMOVE THE EFFECTS OF THE TV SYSTEM AND TO DEPICT THE ACTUAL SCENE LUMINANCE AND LARGE-SCALE ALBEDO VARIATIONS, NOT SMALL-SCALE DETAIL. THIS REPRESENTATION IS RATHER FLAT IN CONTRAST FOR ALL THE MARTIAN TERRAIN TONAL CHARACTERISTICS. THE SPACECRAFT VIDICONs WERE CALIBRATED TO DETERMINE THE RELATIONSHIP BETWEEN THE INPUT LUMINANCE AND THE CAMERA OUTPUT SIGNAL AS A FUNCTION OF POSITION IN EACH FRAME. EACH PICTURE ELEMENT WAS THEN TREATED AS A TINY PHOTOMETER WITH UNIQUE TRANSFER PROPERTIES. THE RECORDED OUTPUT SIGNAL WAS CONVERTED TO THE ACTUAL SCENE LUMINANCE, AND THE RESULT WAS STORED IN THE CORRECTED OUTPUT IMAGE FOR THESE PHOTOMETRICALLY DECALIBRATED PHOTOGRAPHS.

DATA SET NAME- NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-014A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF UP TO SIX ALTERNATIVE VERSIONS OF 24 CONTRAST ENHANCED NEAR-ENCOUNTER PHOTOGRAPHS OF MARS. (FRAME 6N25 WAS NOT PROCESSED.) THESE VERSIONS WERE PRODUCED ON 70-MM NEGATIVE FILM BY DIGITALLY PROCESSING THE ORIGINAL RAW ANALOG DATA. THE PROCEDURE DIVIDED THE 256-LEVEL GRAY SCALE INTO THREE GROUPS, THE LOWER, MIDDLE, AND UPPER DATA NUMBER RANGES, AND STRETCHED ONE RANGE. EACH SPECIALIZED VERSION WAS PRODUCED FROM ONE OF THESE GRAY-SCALE STRETCHES. VIDEO RECONSTRUCTION AND RECTIFICATION PROCESSES, AS IN DATA SETS -01C AND -01D, WERE APPLIED TO OBTAIN THE FINAL VERSIONS.

DATA SET NAME- FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-014A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/29/69 TO 07/30/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF UP TO SIX ALTERNATIVE VERSIONS OF 49 CONTRAST

ENHANCED FAR-ENCOUNTER PHOTOGRAPHS OF MARS. THESE VERSIONS WERE PRODUCED ON 70-MM NEGATIVE FILM BY DIGITALLY PROCESSING THE ORIGINAL RAW ANALOG DATA. THE PROCEDURE DIVIDED THE 256-LEVEL GRAY SCALE INTO THREE GROUPS, THE DARK, LIGHT, AND POLAR CAP DATA NUMBER RANGES, AND STRETCHED ONE RANGE. EACH SPECIALIZED VERSION WAS PRODUCED FROM ONE OF THESE GRAY-SCALE STRETCHES. VIDEO RECONSTRUCTION AND RECTIFICATION PROCESSES, AS IN DATA SETS -01C AND -01D, WERE APPLIED TO OBTAIN THE FINAL VERSIONS.

DATA SET NAME- NEAR-ENCOUNTER PHOTOGRAPHIC MOSAICS

NSSDC ID 69-014A-01I

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO 4- BY 5-IN. MOSAICS ASSEMBLED FROM THE NEAR-ENCOUNTER PHOTOGRAPHS OF MARINER 6. THE FIRST MOSAIC WAS ASSEMBLED FROM FRAMES 1 TO 8 AND SHOWS THE AURORAE SINUS AREA. THE SECOND MOSAIC WAS ASSEMBLED FROM FRAMES 9 TO 24 AND SHOWS THE MERIDIANI SINUS AREA. COLLECTIVELY, THESE MOSAICS CONTAIN ALL THE MARINER 6 NEAR-ENCOUNTER PICTURES EXCEPT THAT TAKEN RIGHT AT THE TERMINATOR.

DATA SET NAME- NEAR-ENCOUNTER ENHANCED PHOTOGRAPHS ON  
TAPE

NSSDC ID 69-014A-01J

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF MARINER 6 NEAR-ENCOUNTER ENHANCED PHOTOGRAPHS ON TWO IBM 360, 7-TRACK, BINARY MAGNETIC TAPES, WITH ODD PARITY AT 800 BPI. EACH FILE CONTAINS A SINGLE PICTURE, AND EACH RECORD IN A FILE CORRESPONDS TO A LINE OF TV PICTURES. A PICTURE ELEMENT IS WRITTEN IN BINARY AS AN EIGHT-BIT BYTE. PRECEDING THE BINARY PICTURE DATA OF EACH FILE ARE SEVERAL LABEL RECORDS WRITTEN IN EBCDIC. THESE RECORDS, WHICH CONTAIN FIVE 72-BYTE LOGICAL RECORDS EACH, PROVIDE INFORMATION SUCH AS THE NUMBER OF LINES AND SAMPLES IN THE FOLLOWING FILE, THE PICTURE IDENTIFICATION, AND A HISTORY OF THE COMPUTER PROCESSING TO WHICH THE PICTURE HAS BEEN SUBJECTED.

DATA SET NAME- NEAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS  
ON TAPE

NSSDC ID 69-014A-01K

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF MARINER 6 NEAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON TWO IBM 360, 7-TRACK, BINARY MAGNETIC TAPES, WITH ODD PARITY AT 800 BPI. EACH FILE CONTAINS A SINGLE PICTURE, AND EACH RECORD IN A FILE CORRESPONDS TO A LINE OF TV PICTURES. A PICTURE ELEMENT IS WRITTEN IN BINARY AS AN EIGHT-BIT BYTE. PRECEDING THE BINARY PICTURE DATA OF EACH FILE ARE SEVERAL LABEL RECORDS WRITTEN IN EBCDIC. THESE RECORDS, WHICH CONTAIN FIVE 72-BYTE LOGICAL RECORDS EACH, PROVIDE INFORMATION SUCH AS THE NUMBER OF LINES AND SAMPLES IN THE FOLLOWING FILE, PICTURE IDENTIFICATION, AND A HISTORY OF THE COMPUTER PROCESSING TO WHICH THE PICTURE HAS BEEN SUBJECTED. DOCUMENTATION THAT DESCRIBES THE GENESIS AND SCALING OF THE NUMERICAL PHOTOMETRIC DATA IS AVAILABLE IN HARD-COPY FORM AND IS SENT TO REQUESTERS ALONG WITH THE TAPES.

DATA SET NAME- FAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON  
TAPE

NSSDC ID 69-014A-01L

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/29/69 TO 07/30/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF MARINER 6 FAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON FOUR IBM 360, 7-TRACK, BINARY MAGNETIC TAPES, WITH ODD PARITY AT 800 BPI. EACH FILE CONTAINS A SINGLE PICTURE, AND EACH RECORD IN A FILE CORRESPONDS TO A LINE OF TV PICTURES. A PICTURE ELEMENT IS WRITTEN IN BINARY AS AN EIGHT-BIT BYTE. PRECEDING THE BINARY PICTURE DATA OF EACH FILE ARE SEVERAL LABEL RECORDS WRITTEN IN EBCDIC. THESE RECORDS, WHICH CONTAIN FIVE 72-BYTE LOGICAL RECORDS EACH, PROVIDE INFORMATION SUCH AS THE NUMBER OF LINES AND SAMPLES IN THE FOLLOWING FILE, PICTURE IDENTIFICATION, AND A HISTORY OF THE COMPUTER PROCESSING TO WHICH THE PICTURE HAS BEEN SUBJECTED. DOCUMENTATION THAT DESCRIBES THE GENESIS AND SCALING OF THE NUMERICAL PHOTOMETRIC DATA IS AVAILABLE IN HARD-COPY FORM AND IS SENT TO REQUESTERS ALONG WITH THE TAPES.

EXPERIMENT NAME- IR SPECTROMETER

NSSDC ID 69-014A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- G.C. PIMENTEL, U OF CALIFORNIA, BERK, BERKELEY, CALIF.  
K.C. FERR, U OF CALIFORNIA, BERK, BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 07/31/69

EXPERIMENT BRIEF DESCRIPTION

SPECTRAL MEASUREMENTS OF THE THERMAL (IR) EMISSION BY THE MARTIAN SURFACE AND ATMOSPHERE WERE OBTAINED IN ORDER TO DETERMINE (1) THE ATMOSPHERIC



COMPOSITION, INCLUDING POLYATOMIC LIFE-RELATED MOLECULES, (2) THE SURFACE TEMPERATURE ALONG THE TRACK OF VIEW, (3) THE SURFACE COMPOSITION, (4) THE SURFACE TOPOGRAPHY, (5) THE COMPOSITION OF THE POLAR CAP, AND (6) THE BRIGHT LMB IR EMISSION CHARACTERISTICS. THE EXPERIMENT, MOUNTED ON THE BOTTOM OF THE OCTAGONAL SCAN PLATFORM OF THE SPACECRAFT, USED AN INFRARED SPECTROMETER THAT CONSISTED OF A TELESCOPE, OPTICAL FOCUSING LENSES AND MIRRORS, A VARIABLE-WEDGE INTERFERENCE FILTER THAT SELECTED THE WAVELENGTHS REACHING THE DETECTORS, AND COOLED IR DETECTORS. THE SPECTRA OBSERVED WERE TO INCLUDE THE WAVELENGTH REGION OF 1.9 TO 14.3 MICRONS AND WERE TO BE PROVIDED BY CHANNEL 1 (4.0 TO 14.3 MICRONS), WHICH WAS DESIGNED TO OPERATE ON EMITTED LIGHT FROM THE PLANET AND TO OBTAIN MEASUREMENTS ON THE DARK SIDE OF THE PLANET, AND BY CHANNEL 2 (1.9 TO 6.0 MICRONS), WHICH OPERATED ON REFLECTED SOLAR RADIATION. DUE TO THE FAILURE OF THE CHANNEL 1 CRYOSTAT, MEASUREMENTS WERE OBTAINED ONLY FROM CHANNEL 2. THE INSTRUMENT TELESCOPE HAD A FIELD OF VIEW OF 2 DEG AND, THUS, AT CLOSEST APPROACH (ABOUT 3400 KM), THE GEOGRAPHICAL RESOLUTION WAS ABOUT 120 KM BY 3 KM AND, DURING A SINGLE SCAN, ABOUT 120 KM BY 120 KM. THE SPECTRAL RESOLUTION OBTAINED WAS 0.5 TO 1 PERCENT. ABOUT 29 MIN OF DATA WERE OBTAINED DURING THE MARINER 6 NEAR-ENCOUNTER EQUATORIAL SCAN ON JULY 31, 1969. THE QUALITY OF THE DATA IS EXCELLENT.

DATA SET NAME- IR SPECTROMETER DATA

NSSDC ID 69-014A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

#### DATA SET BRIEF DESCRIPTION

THE IR SPECTRAL DATA FROM THE MARINER 6 SPECTROMETER EXPERIMENT ARE CONTAINED ON SIX 4-1/8- BY 5-7/8-IN. MICROFICHE CARDS THAT WERE GENERATED FROM THE JET PROPULSION LABORATORY'S MASTER DATA RECORD TAPES. THE CARDS, WHICH ARE ATTACHED TO THE UNIVERSITY OF CALIFORNIA AT BERKELEY DATA FORMAT REPORT, EACH SHOW SEPARATE PLOTS OF THE ABSORPTION INTENSITY FOR CHANNEL 2 VS WAVELENGTH FOR 10-SEC INTERVALS. ALSO INCLUDED ON THE PLOTS ARE THE SPECTRUM NUMBER, TIME OF EACH SPECTRUM, SPACECRAFT NUMBER, AND AN INDICATOR DESIGNATING WHETHER THE SPECTRA WERE HIGH OR LOW GAIN. THE DATA COVER THE TIME PERIOD FROM 05 HR 02 MIN 55 SEC TO 05 HR 32 MIN 10 SEC SPACECRAFT UT ON JULY 31, 1969. THE QUALITY OF THE DATA IS GOOD. A SUPPLEMENT TO THE DATA FORMAT REPORT CONTAINS THE SPECTROMETER CALIBRATION DATA ON FOUR MICROFICHE CARDS.

EXPERIMENT NAME- TWO-CHANNEL IR RADIOMETER MARS SURFACE TEMPERATURE

NSSDC ID 69-014A-03

ORIGINAL EXPERIMENT INSTITUTION- CAL TECH

INVESTIGATORS- G. NEUGEBAUER, CAL TECH, PASADENA, CALIF.

G. MUNCH, CAL TECH, PASADENA, CALIF.

S.C. CHASE, JR., SANTA BARBARA RES CNTR, GOLETA, CALIF.

DATE LAST USEFUL DATA RECORDED- 07/31/69

EXPERIMENT BRIEF DESCRIPTION

THE EQUIVALENT BLACKBODY TEMPERATURE OF THE MARTIAN SURFACE WAS DETERMINED BY MEANS OF A TWO-CHANNEL INFRARED RADIOMETER, WHICH MEASURED THE INFRARED ENERGY EMITTED IN THE 8- TO 12-MICRON AND 18- TO 25-MICRON BANDS AND HAD A DYNAMIC RANGE OF 120 TO 330 DEG K. THE TWO CHANNELS, LOCATED IN ATMOSPHERIC 'WINDOWS,' EMPHASIZED THE UPPER AND LOWER TEMPERATURES OF THIS RANGE, RESPECTIVELY. THE EXPERIMENT PACKAGE WAS LOCATED ON THE BOTTOM OF THE OCTAGONAL SCAN PLATFORM OF THE SPACECRAFT. THE RADIOMETER CONSISTED OF TWO REFRACTING TELESCOPES EACH EQUIPPED WITH AN UNCOOLED ANTIMONY-BISMUTH THERMOPILE DETECTOR. THE EXPERIMENT USED AN OPTICAL TRAIN THAT INCLUDED A ROTATABLE PLANE MIRROR, WHICH REFLECTED THE INCIDENT ENERGY INTO THE DETECTOR TELESCOPES. THE MIRROR HAD THREE ORTHOGONAL POSITIONS. THE FIRST POSITION VIEWED EMPTY SPACE AND OBTAINED A ZERO ENERGY REFERENCE, THE SECOND VIEWED THE PLANET, AND THE THIRD MEASURED THE THERMAL ENERGY RADIATED BY A TEMPERATURE CALIBRATION PLATE. AFTER SPACE WAS VIEWED FOR ONE FRAME COUNT (4.2 SEC), 13 OBSERVATIONS OF THE PLANET WERE MADE AT 2.1-SEC INTERVALS IN EACH WAVELENGTH CHANNEL. THEN, FOLLOWING A SHORT LOOK AT THE TEMPERATURE REFERENCE PLATE, 14 MORE PLANETARY OBSERVATIONS WERE MADE. THE CYCLE, WHICH LASTED 63 SEC (15 FRAME COUNTS), WAS THEN REPEATED, BEGINNING WITH A VIEW OF SPACE. ABOUT 21 MIN OF DATA WERE OBTAINED ON JULY 31, 1969, DURING NEAR ENCOUNTER, ACROSS AND BEYOND THE TERMINATOR OVER EQUATORIAL REGIONS. THE DATA WERE USED TO DETERMINE THE THERMAL INERTIA OF THE SURFACE MATERIAL AS WELL AS THE NATURE OF THE VARYING GROUND STRUCTURE. THE QUALITY OF THE DATA IS GOOD. THE DATA HAVE BEEN CORRECTED FOR THE GREATER THAN EXPECTED RESPONSE TO OFF-AXIS RADIATION.

DATA SET NAME- REDUCED TWO-CHANNEL IR RADIOMETER DATA  
ON TAPE

NSSDC ID 69-014A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 07/31/69 TO 07/31/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED INFRARED RADIOMETER DATA RECORDED ON ONE 800-BPI, 7-TRACK, BCD MAGNETIC TAPE. IT CONTAINS, IN TABULAR FORM, BRIGHTNESS TEMPERATURES (DEG K) DERIVED FROM THE 8- TO 12-MICRON AND 18- TO 25-MICRON RADIOMETER CHANNEL OUTPUTS AS A FUNCTION OF LATITUDE, LONGITUDE, AND SPACECRAFT UT. THE TIME SPAN OF THE DATA IS ABOUT 21 MIN, FROM 05 HR 05 MIN 44 SEC TO 05 HR 26 MIN 57 SEC SPACECRAFT UT ON JULY 31, 1969. THERE ARE NO TEMPERATURES DELETED FROM THE 8- TO 12-MICRON CHANNEL, WHILE ONLY EIGHT OUT OF THE POSSIBLE 524 TEMPERATURE READINGS ARE DELETED FROM THE 18- TO 25-MICRON CHANNEL DUE TO EXCESSIVE RESPONSE TO OFF-AXIS RADIATION.

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SPACECRAFT NAME- MARINER 7  
OTHER NAMES- PL-691F, MARINER MARS 69B, 1969-030A

NSSDC ID 69-030A

LAUNCH DATE- 03/27/69

DATE LAST SCIENTIFIC DATA RECORDED- 08/05/69

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT-

380 KG

ORBIT TYPE- HELIOCENTRIC

EPOCH- 03/27/69

ORBIT PERIOD- 517 DAYS

APOGEE- 1.52 AU RAD

PERIGEE- 1.0 AU RAD

INCLINATION- 0 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

MARINER 7 WAS THE SEVENTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY MODE. IT WAS IDENTICAL TO THE MARINER 6 SPACECRAFT. MARINER 7 WAS ATTITUDE STABILIZED IN THREE AXES (REFERENCED TO THE SUN AND THE STAR CANOPUS). THE SPACECRAFT WAS SOLAR POWERED AND CAPABLE OF CONTINUOUS TELEMETRY TRANSMISSION, AND IT WAS FULLY AUTOMATIC IN OPERATION ALTHOUGH IT COULD BE REPROGRAMMED FROM EARTH DURING THE MISSION. THE SPACECRAFT WAS ORIENTED ENTIRELY TO PLANETARY DATA ACQUISITION, AND NO DATA WERE OBTAINED DURING THE TRIP TO MARS OR BEYOND MARS. MARINER 7 PASSED 3430 KM FROM MARS ON AUGUST 5, 1969. THE SPACECRAFT INSTRUMENTS TOOK TV IMAGES OF MARS AND MEASURED THE RADIO REFRACTIVITY AND UV AND IR EMISSIONS OF THE MARTIAN ATMOSPHERE. THE MISSION WAS A SUCCESS.

EXPERIMENT NAME- MARS TV CAMERA

NSSDC ID 69-030A-01

ORIGINAL EXPERIMENT INSTITUTION- CAL TECH

INVESTIGATORS- R.B. LEIGHTON, CAL TECH, PASADENA, CALIF.

DATE LAST USEFUL DATA RECORDED- 08/05/69

#### EXPERIMENT BRIEF DESCRIPTION

TWO TELEVISION VIDICON CAMERAS, ONE OF MEDIUM RESOLUTION (WIDE ANGLE) AND THE OTHER OF HIGH RESOLUTION (NARROW ANGLE), WERE PART OF THE MARINER 7 SCIENTIFIC INSTRUMENTATION. THE WIDE-ANGLE CAMERA, WHICH HAD A FIELD OF VIEW OF 11 DEG BY 14 DEG AND A FOCAL LENGTH OF 50 MM, ENCOMPASSED 100 TIMES MORE SURFACE AREA THAN THE NARROW-ANGLE CAMERA AND WAS USED ONLY FOR NEAR-ENCOUNTER PICTURES. THE NARROW-ANGLE CAMERA, WHICH WAS USED FOR BOTH NEAR- AND FAR-ENCOUNTER PICTURES, HAD A FOCAL LENGTH OF 508 MM AND PROVIDED 10 TIMES THE LINEAR RESOLUTION OF THE WIDE-ANGLE CAMERA. CAMERA SHUTTERS WERE ALTERNATED AND TIMED TO PROVIDE OVERLAPPING OF THE WIDE-ANGLE AND NARROW-ANGLE PICTURES, PROVIDING 126 PICTURES FROM THE TWO SYSTEMS -- 33 NEAR-ENCOUNTER AND 93 FAR-ENCOUNTER. THE NEAR-ENCOUNTER PICTURES WERE TAKEN BETWEEN 20 MIN 26 SEC BEFORE CLOSEST APPROACH AND 2 MIN 6 SEC AFTER CLOSEST APPROACH ALONG A ROUGHLY NORTH-SOUTH COURSE THAT INTERSECTED THE MARINER 6 TRACK AND INCLUDED THE MARTIAN SOUTH POLAR CAP. THE FAR-ENCOUNTER PICTURES WERE OBTAINED IN THREE SERIES OF OPERATIONS BETWEEN 68 HR AND 5 HR BEFORE CLOSEST APPROACH. TWO FRACTIONAL PICTURES WERE OBTAINED AT THE END OF THE FIRST TWO SERIES. THE PICTURE DATA WERE ENCODED AND RECORDED WITHIN THE ONBOARD TELEVISION AND DATA STORAGE SUBSYSTEMS. FOR EACH PICTURE PRODUCED BY THE CAMERAS, THREE SEPARATE ENCODED VERSIONS WERE TRANSMITTED TO EARTH -- A COMPOSITE ANALOG VIDEO (CAV) PICTURE, A DIGITAL VIDEO (DV) PICTURE, AND AN EVERY TWENTY-EIGHTH (ETE) DIGITAL PICTURE. VIDEO RECONSTRUCTION CONSISTED OF COMBINING THE THREE DATA STREAMS (CAV, DV, AND ETE). THIS

GENERATED VIDEO DATA AS THEY EXISTED COMING OUT OF THE CAMERA HEADS. THE TELEMETERED VIDEO MAGNETIC TAPES WERE DISPLAYED ON A CRT AND PHOTOGRAPHED ON 70-MM FILM TO PRODUCE THE RAW IMAGES. THEY WERE ALSO DIGITALLY PROCESSED BY AN IBM 360/44 COMPUTER FOR ENHANCEMENT AND BY AN IBM 360/75 FOR NOISE REMOVAL TO OBTAIN THE VERSIONS CONTAINED IN DATA SETS -01C THROUGH -01H. DETAILED INFORMATION ON THE DIGITAL PROCESSING PROCEDURES CAN BE FOUND IN 'DIGITAL PROCESSING OF THE MARINER 6 AND 7 PICTURES,' T. C. RINDFLEISH ET AL., J. GEOPHYS. RES., 76, 354-417, JANUARY 1971. ACCURATE TRAJECTORY AND RELATED GEOMETRICAL DATA CAN BE FOUND IN 'MARINER MARS 1969 SIMULATED TV PICTURES (FINAL),' J. K. CAMPBELL, 1970, WHICH WAS ISSUED BY JPL.

DATA SET NAME- RAW-ANALOG NEAR-ENCOUNTER PHOTOS

NSSDC ID 69-030A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/05/69 TO 08/05/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 33 UNENHANCED PHOTOGRAPHS ON 70-MM POSITIVE FILM. THESE ARE ORIGINAL COPIES, I.E., DIRECT FROM THE CRT, OF THE PHOTOGRAPHS TAKEN BY BOTH THE NARROW-ANGLE AND THE WIDE-ANGLE CAMERAS. THE FILM WAS SUPPLIED BY THE EXPERIMENTER TEAM AT JPL. EACH PHOTOGRAPH CONTAINS A LIMITED VIEW OF THE MARTIAN SURFACE.

DATA SET NAME- RAW-ANALOG FAR-ENCOUNTER PHOTOS

NSSDC ID 69-030A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 06/02/69 TO 08/04/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 93 UNENHANCED PHOTOGRAPHS TAKEN BY THE NARROW-ANGLE CAMERA. THE PHOTOS ARE ORIGINAL COPIES ON 70-MM POSITIVE FILM AS PHOTOGRAPHED FROM THE CRT. EACH PHOTOGRAPH CONTAINS A LIMITED VIEW OF THE MARTIAN SURFACE.

DATA SET NAME- NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
OPTIMAL PRESENTATION PHOTOS

NSSDC ID 69-030A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/05/69 TO 08/05/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS AN ENHANCED VERSION OF 32 OF THE NEAR-ENCOUNTER

PHOTOGRAPHS OF MARS RETURNED BY THE TELEVISION EXPERIMENT. THIS VERSION IS THE ORIGINAL COMPUTER ENHANCED 70-MM NEGATIVE, PRODUCED FOR OPTIMAL PRESENTATION. SMALL-SCALE DETAIL WITHIN EACH FRAME WAS EMPHASIZED, CONTRAST WAS ENHANCED, SYSTEM NOISES WERE SUPPRESSED, AND GEOMETRIC DISTORTIONS WERE CORRECTED BY DIGITAL PROCESSING OF THE IMAGES ON THE SPACECRAFT AND ON THE GROUND DURING VIDEO RECONSTRUCTION AND RECTIFICATION. IMPROVEMENT OF IMAGE RESOLUTION AND SHARPENING OF FEATURES WAS A RESULT OF HIGH PASS FILTERING. THIS PROCESSING OF THE TELEVISION DATA ACHIEVES MAXIMUM QUALITY IMAGE DISPLAY FOR PHOTO INTERPRETATION.

DATA SET NAME- FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
OPTIMAL PRESENTATION PHOTOS

NSSDC ID 69-030A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/02/69 TO 08/04/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS AN ENHANCED VERSION OF 91 OF THE FAR-ENCOUNTER PHOTOGRAPHS OF MARS RETURNED BY THE TELEVISION EXPERIMENT. THIS VERSION IS THE ORIGINAL COMPUTER ENHANCED 70-MM NEGATIVE, PRODUCED FOR OPTIMAL PRESENTATION. SMALL-SCALE DETAIL WITHIN EACH FRAME WAS EMPHASIZED, CONTRAST WAS ENHANCED, SYSTEM NOISES WERE SUPPRESSED, AND GEOMETRIC DISTORTIONS WERE CORRECTED BY DIGITAL PROCESSING OF THE IMAGES ON THE SPACECRAFT AND ON THE GROUND DURING VIDEO RECONSTRUCTION AND RECTIFICATION. IMPROVEMENT OF IMAGE RESOLUTION AND SHARPENING OF FEATURES WAS A RESULT OF FILTERING. THIS PROCESSING OF THE TELEVISION DATA ACHIEVES MAXIMUM QUALITY IMAGE DISPLAY FOR PHOTO INTERPRETATION.

DATA SET NAME- NEAR-ENCOUNTER PHOTOMETRICALLY  
DECALIBRATED PHOTOS

NSSDC ID 69-030A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 06/05/69 TO 08/05/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A DECALIBRATED VERSION OF 32 OF THE NEAR-ENCOUNTER PHOTOGRAPHS OF MARS FROM THE TELEVISION EXPERIMENT. THIS VERSION IS ON 70-MM NEGATIVE FILM AND WAS DIGITALLY PROCESSED TO REMOVE THE EFFECTS OF THE TV SYSTEM AND TO DEPICT THE ACTUAL SCENE LUMINANCE AND LARGE-SCALE ALBEDO VARIATIONS, NOT SMALL-SCALE DETAIL. THIS REPRESENTATION IS RATHER FLAT IN CONTRAST FOR ALL THE MARTIAN TERRAIN TONAL CHARACTERISTICS. THE SPACECRAFT VIDICONS WERE CALIBRATED TO DETERMINE THE RELATIONSHIP BETWEEN THE INPUT LUMINANCE AND THE CAMERA OUTPUT SIGNAL AS A FUNCTION OF POSITION IN EACH FRAME. EACH PICTURE ELEMENT WAS THEN TREATED AS A TINY PHOTOMETER WITH UNIQUE TRANSFER PROPERTIES. THE RECORDED OUTPUT SIGNAL WAS CONVERTED TO THE ACTUAL SCENE LUMINANCE, AND THE RESULT WAS STORED IN THE CORRECTED OUTPUT IMAGE FOR THESE PHOTOMETRICALLY DECALIBRATED PHOTOGRAPHS.

DATA SET NAME- FAR-ENCOUNTER PHOTOMETRICALLY  
DECALIBRATED PHOTOS

NSSDC ID 69-030A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/02/69 TO 08/04/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A DECALIBRATED VERSION OF 91 FAR-ENCOUNTER PHOTOGRAPHS OF MARS FROM THE TELEVISION EXPERIMENT. (FRAMES 7F34 AND 7F68 ARE EXCLUDED DUE TO INSUFFICIENT PHOTO DATA.) THIS VERSION IS ON 70-MM NEGATIVE FILM AND WAS DIGITALLY PROCESSED TO REMOVE THE EFFECTS OF THE TV SYSTEM AND TO DEPICT THE ACTUAL SCENE LUMINANCE AND LARGE-SCALE ALBEDO VARIATIONS, NOT SMALL-SCALE DETAIL. THIS REPRESENTATION IS RATHER FLAT IN CONTRAST FOR ALL THE MARTIAN TERRAIN TONAL CHARACTERISTICS. THE SPACECRAFT VIDICONS WERE CALIBRATED TO DETERMINE THE RELATIONSHIP BETWEEN THE INPUT LUMINANCE AND THE CAMERA OUTPUT SIGNAL AS A FUNCTION OF POSITION IN EACH FRAME. EACH PICTURE ELEMENT WAS THEN TREATED AS A TINY PHOTOMETER WITH UNIQUE TRANSFER PROPERTIES. THE RECORDED OUTPUT SIGNAL WAS CONVERTED TO THE ACTUAL SCENE LUMINANCE, AND THE RESULT WAS STORED IN THE CORRECTED OUTPUT IMAGE FOR THESE PHOTOMETRICALLY DECALIBRATED PHOTOGRAPHS.

DATA SET NAME- NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-030A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/05/69 TO 08/05/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF UP TO SIX ALTERNATIVE VERSIONS OF THE 33 CONTRAST ENHANCED NEAR-ENCOUNTER PHOTOGRAPHS OF MARS. THESE VERSIONS WERE PRODUCED ON 70-MM NEGATIVE FILM BY DIGITALLY PROCESSING THE ORIGINAL RAW ANALOG DATA. THE PROCEDURE DIVIDED THE 256-LEVEL GRAY SCALE INTO THREE GROUPS, THE LOWER, MIDDLE, AND UPPER DATA NUMBER RANGES, AND STRETCHED ONE RANGE. EACH SPECIALIZED VERSION WAS PRODUCED FROM ONE OF THESE GRAY-SCALE STRETCHES. VIDEO RECONSTRUCTION AND RECTIFICATION PROCESSES, AS IN DATA SETS -01C AND -01D, WERE APPLIED TO OBTAIN THE FINAL VERSIONS.

DATA SET NAME- FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY  
ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-030A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/02/69 TO 08/04/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF UP TO SIX ALTERNATIVE VERSIONS OF 91 CONTRAST

ENHANCED FAR-ENCOUNTER PHOTOGRAPHS OF MARS. (FRAMES 7F34 AND 7F68 WERE NOT PROCESSED.) THESE VERSIONS WERE PRODUCED ON 70-MM NEGATIVE FILM BY DIGITALLY PROCESSING THE ORIGINAL RAW ANALOG DATA. THE PROCEDURE DIVIDED THE 256-LEVEL GRAY SCALE INTO THREE GROUPS, THE DARK, LIGHT, AND POLAR CAP DATA NUMBER RANGES, AND STRETCHED ONE RANGE. EACH SPECIALIZED VERSION WAS PRODUCED FROM ONE OF THESE GRAY-SCALE STRETCHES. VIDEO RECONSTRUCTION AND RECTIFICATION PROCESSES, AS IN DATA SETS -01C AND -01D, WERE APPLIED TO OBTAIN THE FINAL VERSIONS.

DATA SET NAME- NEAR-ENCOUNTER ENHANCED PHOTOGRAPHS ON  
TAPE

NSSDC ID 69-030A-01J

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/05/69 TO 02/05/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF MARINER 7 NEAR-ENCOUNTER ENHANCED PHOTOGRAPHS ON THREE IBM 360, 7-TRACK, BINARY MAGNETIC TAPES, WITH ODD PARITY AT 800 BPI. EACH FILE CONTAINS A SINGLE PICTURE, AND EACH RECORD IN A FILE CORRESPONDS TO A LINE OF TV PICTURES. A PICTURE ELEMENT IS WRITTEN IN BINARY AS AN EIGHT-BIT BYTE. PRECEDING THE BINARY PICTURE DATA OF EACH FILE ARE SEVERAL LABEL RECORDS WRITTEN IN EBCDIC. THESE RECORDS, WHICH CONTAIN FIVE 72-BYTE LOGICAL RECORDS EACH, PROVIDE INFORMATION SUCH AS THE NUMBER OF LINES AND SAMPLES IN THE FOLLOWING FILE, PICTURE IDENTIFICATION, AND A HISTORY OF THE COMPUTER PROCESSING TO WHICH THE PICTURE HAS BEEN SUBJECTED.

DATA SET NAME- NEAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS  
ON TAPE

NSSDC ID 69-030A-01K

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 02/05/69 TO 02/05/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF MARINER 7 NEAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON THREE IBM 360, 7-TRACK, BINARY MAGNETIC TAPES, WITH ODD PARITY AT 800 BPI. EACH FILE CONTAINS A SINGLE PICTURE, AND EACH RECORD IN A FILE CORRESPONDS TO A LINE OF TV PICTURES. A PICTURE ELEMENT IS WRITTEN IN BINARY AS AN EIGHT-BIT BYTE. PRECEDING THE BINARY PICTURE DATA OF EACH FILE ARE SEVERAL LABEL RECORDS WRITTEN IN EBCDIC. THESE RECORDS, WHICH CONTAIN FIVE 72-BYTE LOGICAL RECORDS EACH, PROVIDE INFORMATION SUCH AS THE NUMBER OF LINES AND SAMPLES IN THE FOLLOWING FILE, PICTURE IDENTIFICATION, AND A HISTORY OF THE COMPUTER PROCESSING TO WHICH THE PICTURE HAS BEEN SUBJECTED. DOCUMENTATION THAT DESCRIBES THE GENESIS AND SCALING OF THE NUMERICAL PHOTOMETRIC DATA IS AVAILABLE IN HARD-COPY FORM AND IS PROVIDED TO REQUESTERS ALONG WITH THE TAPES.

DATA SET NAME- FAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON  
TAPE

NSSDC ID 69-030A-01L

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/02/69 TO 08/04/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF MARINER 7 FAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON SIX IBM 360, 7-TRACK, BINARY MAGNETIC TAPES, WITH ODD PARITY AT 800 BPI. EACH FILE CONTAINS A SINGLE PICTURE, AND EACH RECORD IN A FILE CORRESPONDS TO A LINE OF TV PICTURES. A PICTURE ELEMENT IS WRITTEN IN BINARY AS AN EIGHT-BIT BYTE. PRECEDING THE BINARY PICTURE DATA OF EACH FILE ARE SEVERAL LABEL RECORDS WRITTEN IN EBCDIC. THESE RECORDS, WHICH CONTAIN FIVE 72-BYTE LOGICAL RECORDS EACH, PROVIDE INFORMATION SUCH AS THE NUMBER OF LINES AND SAMPLES IN THE FOLLOWING FILE, PICTURE IDENTIFICATION, AND A HISTORY OF THE COMPUTER PROCESSING TO WHICH THE PICTURE HAS BEEN SUBJECTED. DOCUMENTATION THAT DESCRIBES THE GENESIS AND SCALING OF THE NUMERICAL PHOTOMETRIC DATA IS AVAILABLE IN HARD-COPY FORM AND IS PROVIDED TO REQUESTERS ALONG WITH THE TAPES.

EXPERIMENT NAME- IR SPECTROMETER

NSSDC ID 69-030A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

INVESTIGATORS- G.C. PIMENTEL, U OF CALIFORNIA, BERK, BERKELEY, CALIF.  
K.C. FERR, U OF CALIFORNIA, BERK, BERKELEY, CALIF.

DATE LAST USEFUL DATA RECORDED- 08/05/69

EXPERIMENT BRIEF DESCRIPTION

SPECTRAL MEASUREMENTS OF THE THERMAL (IR) EMISSION FROM THE MARTIAN SURFACE AND ATMOSPHERE WERE OBTAINED IN ORDER TO DETERMINE (1) THE ATMOSPHERIC COMPOSITION, INCLUDING POLYATOMIC LIFE-RELATED MOLECULES, (2) THE SURFACE TEMPERATURE ALONG THE TRACK OF VIEW, (3) THE SURFACE COMPOSITION, (4) THE SURFACE TOPOGRAPHY, (5) THE COMPOSITION OF THE POLAR CAP, AND (6) THE BRIGHT LIMB IR EMISSION CHARACTERISTICS. THE EXPERIMENT, MOUNTED ON THE BOTTOM OF THE OCTAGONAL SCAN PLATFORM OF THE SPACECRAFT, USED AN INFRARED SPECTROMETER CONSISTING OF A TELESCOPE, OPTICAL FOCUSING LENSES AND MIRRORS, A VARIABLE-WEDGE INTERFERENCE FILTER THAT SELECTED THE WAVELENGTHS REACHING THE DETECTORS, AND COOLED IR DETECTORS. THE SPECTRA OBSERVED COVERED A WAVELENGTH REGION OF 1.9 TO 14.3 MICRONS AND WERE PROVIDED BY CHANNEL 1 (4.0 TO 14.3 MICRONS), WHICH OPERATED ON EMITTED LIGHT FROM THE PLANET AND CONTINUED TO OBTAIN MEASUREMENTS ON THE DARK SIDE OF THE PLANET, AND CHANNEL 2 (1.9 TO 6.0 MICRONS), WHICH OPERATED ON REFLECTED SOLAR RADIATION. THE INSTRUMENT TELESCOPE HAD A FIELD OF VIEW OF 2 DEG AND, THUS, AT CLOSEST APPROACH (ABOUT 3400 KM), THE GEOGRAPHICAL RESOLUTION WAS ABOUT 120 KM BY 3 KM AND, DURING A SINGLE SCAN, 120 KM BY 120 KM. THE SPECTRAL



RESOLUTION OBTAINED WAS 0.5 TO 1 PERCENT. ABOUT 34 MIN OF DATA WERE OBTAINED FROM BOTH CHANNELS DURING THE MARINER 7 NEAR-ENCOUNTER SCAN OF HIGH-LATITUDE AND POLAR REGIONS OF THE MARTIAN SOUTHERN HEMISPHERE ON AUGUST 5, 1969. THE QUALITY OF THE DATA IS EXCELLENT.

DATA SET NAME- IR SPECTROMETER DATA ON MICROFICHE

NSSDC ID 69-030A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/05/69 TO 08/05/69

DATA SET BRIEF DESCRIPTION

THE IR SPECTRAL DATA FROM THE MARINER 7 SPECTROMETER EXPERIMENT ARE CONTAINED ON FOURTEEN 4-1/8- BY 5-7/8-IN. MICROFICHE CARDS THAT WERE GENERATED FROM THE JET PROPULSION LABORATORY'S MASTER DATA RECORD TAPES. THE CARDS, WHICH ARE ATTACHED TO THE UNIVERSITY OF CALIFORNIA AT BERKELEY DATA FORMAT REPORT, EACH SHOW SEPARATE PLOTS OF THE ABSORPTION INTENSITY FOR CHANNELS 1 AND 2 VS WAVELENGTH FOR 10-SEC INTERVALS. ALSO INCLUDED ON THE PLOTS ARE THE SPECTRUM NUMBER, TIME OF EACH SPECTRUM, SPACECRAFT NUMBER, AND AN INDICATOR DESIGNATING WHETHER THE SPECTRA WERE HIGH OR LOW GAIN. THE DATA COVER THE TIME PERIOD FROM 04 HR 39 MIN 49 SEC TO 05 HR 13 MIN 23 SEC SPACECRAFT UT ON AUGUST 5, 1969, AND ARE OF GOOD QUALITY. A SUPPLEMENT TO THE DATA FORMAT REPORT CONTAINS THE SPECTROMETER CALIBRATION DATA ON FOUR MICROFICHE CARDS.

EXPERIMENT NAME- TWO-CHANNEL IR RADIOMETER MARS SURFACE  
TEMPERATURE

NSSDC ID 69-030A-03

ORIGINAL EXPERIMENT INSTITUTION- CAL TECH

INVESTIGATORS- G. NEUGEBAUER, CAL TECH, PASADENA, CALIF.

G. MUNCH, CAL TECH, PASADENA, CALIF.

S.C. CHASE, JR., SANTA BARBARA RES CNTR, GOLETA, CALIF.

DATE LAST USEFUL DATA RECORDED- 08/05/69

EXPERIMENT BRIEF DESCRIPTION

THE EQUIVALENT BLACKBODY TEMPERATURE OF THE MARTIAN SURFACE WAS DETERMINED BY MEANS OF A TWO-CHANNEL INFRARED RADIOMETER, WHICH MEASURED THE INFRARED ENERGY EMITTED IN THE 8- TO 12-MICRON AND 18- TO 25-MICRON BANDS AND HAD A DYNAMIC RANGE OF 120 TO 330 DEG K. THE TWO CHANNELS, LOCATED IN ATMOSPHERIC "WINDOWS," EMPHASIZED THE UPPER AND LOWER TEMPERATURES OF THIS RANGE, RESPECTIVELY. THE EXPERIMENT PACKAGE WAS LOCATED ON THE BOTTOM OF THE OCTAGONAL SCAN PLATFORM OF THE SPACECRAFT. THE RADIOMETER CONSISTED OF TWO REFRACTING TELESCOPES, EACH EQUIPPED WITH AN UNCOOLED ANTIMONY-BISMUTH THERMOPILE DETECTOR. THE EXPERIMENT USED AN OPTICAL TRAIN THAT INCLUDED A ROTATABLE PLANE MIRROR, WHICH REFLECTED THE INCIDENT ENERGY INTO THE

DETECTOR TELESCOPES. THE MIRROR HAD THREE ORTHOGONAL POSITIONS. THE FIRST POSITION VIEWED EMPTY SPACE AND OBTAINED A ZERO ENERGY REFERENCE, THE SECOND VIEWED THE PLANET, AND THE THIRD MEASURED THE THERMAL ENERGY RADIATED BY A TEMPERATURE CALIBRATION PLATE. AFTER SPACE WAS VIEWED FOR ONE FRAME COUNT (4.2 SEC), 13 OBSERVATIONS OF THE PLANET WERE MADE AT 2.1-SEC INTERVALS IN EACH WAVELENGTH CHANNEL. THEN, FOLLOWING A SHORT LOOK AT THE TEMPERATURE REFERENCE PLATE, 14 MORE PLANETARY OBSERVATIONS WERE MADE. THE CYCLE, WHICH LASTED 63 SEC (15 FRAME COUNTS), WAS THEN REPEATED, BEGINNING WITH A VIEW OF SPACE. ABOUT 27 MIN OF DATA WERE OBTAINED ON AUGUST 5, 1969, OVER HIGH LATITUDES AND POLAR REGIONS OF THE MARTIAN SOUTHERN HEMISPHERE DURING NEAR ENCOUNTER. THESE DATA PROVIDED VALUABLE INFORMATION CONCERNING THE COMPOSITION OF THE POLAR CAP AND SURFACE CONDITIONS IN THAW REGIONS NEAR THE EDGE OF THE POLAR CAP. THE QUALITY OF THE DATA IS GOOD. THE DATA HAVE BEEN CORRECTED FOR THE GREATER THAN EXPECTED RESPONSE TO OFF-AXIS RADIATION.

DATA SET NAME- REDUCED TWO-CHANNEL IR RADIOMETER DATA  
ON TAPE

NSSDC ID 69-030A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 08/05/69 TO 08/05/69

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED INFRARED RADIOMETER DATA RECORDED ON ONE 800-BPI, 7-TRACK, BCD MAGNETIC TAPE. IT CONTAINS, IN TABULAR FORM, BRIGHTNESS TEMPERATURES (DEG K) DERIVED FROM THE 8- TO 12-MICRON AND 18- TO 25-MICRON RADIOMETER CHANNEL OUTPUTS AS A FUNCTION OF LATITUDE, LONGITUDE, AND SPACECRAFT UT. THE TIME SPAN OF THE DATA IS ABOUT 26 MIN, FROM 04 HR 42 MIN 05 SEC TO 05 HR 08 MIN 28 SEC SPACECRAFT UT ON AUGUST 5, 1969. THERE ARE 109 TEMPERATURE READINGS DELETED FROM A POSSIBLE 520 FROM THE 8- TO 12-MICRON CHANNEL, WHILE ONLY 40 OUT OF 520 TEMPERATURES ARE DELETED FROM THE 18- TO 25-MICRON CHANNEL DUE TO EXCESSIVE RESPONSE TO OFF-AXIS RADIATION.

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SPACECRAFT NAME- NIMBUS 3

NSSDC ID 69-037A

OTHER NAMES- PL-664G, NIMBUS-B2, 1969-037A

LAUNCH DATE- 04/14/69

DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- NASA-OSSA

SPACECRAFT WEIGHT IN ORBIT-

576 KG

ORBIT TYPE- GEOCENTRIC

EPQCH- 04/14/69

ORBIT PERIOD- 107.3 MIN.

APOGEE- 1132. KM ALT

PERIGEE- 1071. KM ALT

INCLINATION- 99.922 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

NIMBUS 3 WAS A STABILIZED EARTH-ORIENTED SATELLITE WITH A NEARLY CIRCULAR

SUN-SYNCHRONOUS POLAR ORBIT. ITS ORBIT WAS SUCH THAT A GIVEN POINT ON THE SURFACE OF THE EARTH WAS VIEWED TWICE EVERY 24 HR, ONCE DURING DAYLIGHT AND ONCE IN DARKNESS. THE SPACECRAFT WAS TAILORED TO A METEOROLOGICAL MISSION WITH EXPERIMENTS COVERING THE ELECTROMAGNETIC SPECTRUM FROM THE ULTRAVIOLET THROUGH THE VISIBLE AND INFRARED REGIONS. NIMBUS 3 WAS A SUCCESS AND PERFORMED NORMALLY FROM LAUNCH UNTIL ORBIT 7095 ON SEPTEMBER 25, 1970, WHEN THE REAR HORIZON SCANNER FAILED. WITHOUT THE HORIZON SCANNER, IT WAS NOT POSSIBLE TO MAINTAIN PROPER SPACECRAFT ATTITUDE, THUS MAKING EXPERIMENTAL OBSERVATIONS USELESS, WITH THE EXCEPTION OF THE MONITOR OF ULTRAVIOLET SOLAR ENERGY (MUSE) EXPERIMENT. FROM SEPTEMBER 25, 1970, TO THE PRESENT (MARCH 1971), ONLY THE MUSE EXPERIMENT HAS BEEN OPERATING.

EXPERIMENT NAME- HIGH-RESOLUTION INFRARED RADIOMETER  
(HRIR)

NSSDC ID 69-037A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- G.T. CHERRIX, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 01/31/70

#### EXPERIMENT BRIEF DESCRIPTION

THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) DETECTED THE EMITTED THERMAL RADIATION OF THE EARTH AND ITS ATMOSPHERE IN THE 3.4- TO 4.2-MICRON WAVELENGTH REGION TO PRODUCE CLOUD-COVER PICTURES AND TO MEASURE CLOUDTOP TEMPERATURES DURING THE NIGHTTIME PORTION OF THE ORBIT. BY DETECTING THE REFLECTED SOLAR ENERGY IN THE 0.7- TO 1.3-MICRON REGION, THE RADIOMETER ALSO MAPPED THE EARTH'S CLOUD COVER DURING THE DAYTIME. A ROTATING SCANNING MIRROR CAUSED THE DETECTOR VIEW TO CONTINUOUSLY SWEEP THROUGH A COMPLETE CIRCLE. THE SCAN TIME OF THE MIRROR COINCIDED WITH THE TIME REQUIRED FOR THE SPACECRAFT TO ADVANCE THE WIDTH OF A PICTURE ELEMENT. THE LINES THUS SCANNED FORMED A CONTINUOUS PICTURE. THE HRIR EXPERIMENT WAS SUCCESSFUL, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL THE ONBOARD TAPE RECORDER FAILED ON ORBIT 3522 ON JANUARY 31, 1970. A COMPLETE DESCRIPTION OF THE HRIR EXPERIMENT IS CONTAINED IN THE 'NIMBUS III USER'S GUIDE,' WHICH IS AVAILABLE FROM NSSDC. FOR INFORMATION ON SPECIFIC DATA RECORDED BY THIS EXPERIMENT, SEE 69-037A-02D.

DATA SET NAME- HRIR NIGHTTIME (3.4 TO 4.2 MICRON)  
PHOTOFACSIMILE FILM STRIPS

NSSDC ID 69-037A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/22/69 TO 01/31/70

#### DATA SET BRIEF DESCRIPTION

ALL THE NIMBUS 3 HRIR NIGHTTIME (3.4 TO 4.2 MICRON) DATA ARE AVAILABLE ON 70-MM PHOTOFACSIMILE FILM STRIPS. THE FILM STRIPS ARE UNIFORM OR VARIABLE DENSITY EXPOSURE POSITIVE OR NEGATIVE COPIES IN EITHER A TRANSPARENCY OR PAPER PRINT. THE VARIABLE DENSITY EXPOSURE FILM STRIPS WERE PRODUCED WITH

ENHANCED CONTRAST, WHILE THE UNIFORM DENSITY EXPOSURE FILM STRIPS ARE TRUE COPIES OF THE ARCHIVED HRIR FILM STRIPS. EACH FILM STRIP IS GRIDDED WITH GEOGRAPHIC COORDINATES AND IS IDENTIFIED BY ORBIT NUMBER AND TIME. FOR A COMPLETE DESCRIPTION OF THE PHOTOFACSIMILE FILM STRIPS, SEE SECTION 3.4.1 IN THE 'NIMBUS III USER'S GUIDE,' WHICH IS AVAILABLE FROM NSSDC.

DATA SET NAME- HRIR DAYTIME (0.7 TO 1.3 MICRON)  
PHOTOFACSIMILE FILM STRIPS

NSSDC ID 69-037A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/22/69 TO 01/31/70

DATA SET BRIEF DESCRIPTION

ALL THE NIMBUS 3 HRIR DAYTIME (0.7 TO 1.3 MICRON) DATA ARE AVAILABLE ON 70-MM PHOTOFACSIMILE FILM STRIPS. THE FILM STRIPS ARE UNIFORM OR VARIABLE DENSITY EXPOSURE POSITIVE OR NEGATIVE COPIES IN EITHER A TRANSPARENCY OR PAPER PRINT. THE VARIABLE DENSITY EXPOSURE FILM STRIPS WERE PRODUCED WITH ENHANCED CONTRAST, WHILE THE UNIFORM DENSITY EXPOSURE FILM STRIPS ARE TRUE COPIES OF THE ARCHIVED HRIR FILM STRIPS. EACH FILM STRIP IS GRIDDED WITH GEOGRAPHIC COORDINATES AND IS IDENTIFIED BY ORBIT NUMBER AND TIME. FOR A COMPLETE DESCRIPTION OF THE PHOTOFACSIMILE FILM STRIPS, SEE SECTION 3.4.1 IN THE 'NIMBUS III USER'S GUIDE,' WHICH IS AVAILABLE FROM NSSDC.

DATA SET NAME- HRIR METEOROLOGICAL RADIATION TAPES

NSSDC ID 69-037A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/17/69 TO 01/31/70

DATA SET BRIEF DESCRIPTION

THE HRIR DATA ARE ON MAGNETIC TAPES CALLED NIMBUS METEOROLOGICAL RADIATION TAPES - HRIR (NMRT-HRIR). THESE REDUCED RADIATION DATA TAPES WERE PRODUCED ON AN IBM 360 COMPUTER AND CONTAIN BOTH THE 0.7- TO 1.3-MICRON DAYTIME AND THE 3.4- TO 4.2-MICRON NIGHTTIME RADIANCE VALUES. THE DATA WERE RECORDED ON 7-TRACK TAPE IN BINARY MODE AT A DENSITY OF 800 BPI WITH ONE ORBIT PER FILE. THE FIRST RECORD OF EACH FILE CONTAINS INFORMATION DESCRIBING THE ORBIT. THE FOLLOWING RECORDS CONTAIN THE RADIATION VALUES AND THE LOCATION AND TIME OF EACH OBSERVATION. THE FORMAT OF THE NMRT-HRIR IS GIVEN IN SECTION 3.5 OF THE 'NIMBUS III USER'S GUIDE.' NIMBUS 3 HRIR DATA ARE AVAILABLE FROM APRIL 17, 1965, TO JANUARY 31, 1970, BUT DUE TO THE LARGE VOLUME OF DATA, THE DIGITAL DATA ARE NOT ROUTINELY REDUCED TO FINAL NMRT-HRIR FORMAT. ONLY THOSE DATA SPECIFICALLY REQUESTED BY A USER WILL BE PROCESSED, AND A LONGER THAN NORMAL TIME WILL BE REQUIRED FOR NSSDC TO RESPOND TO A REQUEST.

DATA SET NAME- DATA CATALOG OF EXPERIMENT OPERATIONS

NSSDC ID 69-037A-020

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/22/69 TO 12/31/69

DATA SET BRIEF DESCRIPTION

THE 'NIMBUS III DATA CATALOG' CONSISTS OF A SERIES (CURRENTLY FIVE VOLUMES) PUBLISHED BY NASA TO DOCUMENT DATA ACQUIRED BY THE NIMBUS 3 METEOROLOGICAL SATELLITE. THE CATALOG IS DIVIDED INTO FIVE SECTIONS. VOLUME 1, PART 1, SECTION 1, CONTAINS PRELIMINARY EVALUATIONS OF ALL THE NIMBUS 3 EXPERIMENTS. IN THE REST OF THE VOLUMES, SECTION 1 IS A SUMMARY OF OPERATIONS OF ALL THE EXPERIMENTS DURING THE PERIOD OF TIME COVERED BY THE VOLUME. SECTION 2 IN ALL VOLUMES CONTAINS A TABULAR FORM OF THE ORBITAL ELEMENTS AND A LIST OF DAYS WHEN THE VARIOUS EXPERIMENTS WERE TURNED ON. SECTION 3 (SECTION 4 IN VOL. 1) DEPICTS DAILY PICTORIAL MONTAGES FROM THE IMAGE DISSECTOR CAMERA SYSTEM (IDCS). SECTION 4 (SECTION 5 IN VOL. 1) PICTORIALLY DOCUMENTS AND INDEXES THE DATA FROM THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) EXPERIMENT. THESE MONTAGES REPRESENT DAILY DATA FOR BOTH DAYTIME AND NIGHTTIME COVERAGE AND ARE ARRANGED IN CHRONOLOGICAL ORDER IN WORLD MONTAGE FORMAT. KEY LATITUDES CAN BE READ FROM SUPERIMPOSED GRIDS. ALL THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) PICTORIAL DATA ARE PRESENTED IN SECTION 5 (IN VOL. 1, PART 2). THE DATA CATALOG DOCUMENTS NIMBUS 3 DATA FOR THE FOLLOWING PERIODS -- VOL. 1, APRIL 22 TO MAY 31, 1969, VOL. 2, JUNE 1969, VOL. 3, JULY 1969, VOL. 4, AUGUST 1969, AND VOL. 5, SEPTEMBER 1 TO DECEMBER 31, 1969. MORE VOLUMES WILL BE ADDED AS NEEDED. SECTION 3 OF THE 'NIMBUS III USER'S GUIDE' CONTAINS A COMPLETE DESCRIPTION OF THE HRIR EXPERIMENT AND AVAILABLE DATA AND SHOULD BE USED IN CONJUNCTION WITH THE DATA CATALOG.

EXPERIMENT NAME- INFRARED INTERFEROMETER SPECTROMETER  
(IRIS)

NSSDC ID 69-037A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- R.A. HANEL, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 07/22/69

EXPERIMENT BRIEF DESCRIPTION

THE INFRARED INTERFEROMETER SPECTROMETER (IRIS) EXPERIMENT, DESIGNED TO MEASURE THE EARTH'S SPECTRAL RADIANCES IN THE 5- TO 20-MICRON WAVELENGTH INTERVAL WITH A SPECTRAL RESOLUTION OF 5 RECIPROCAL CM, WAS USED TO DETERMINE THE CHARACTERISTICS OF OZONE, WATER VAPOR, AND MINOR ATMOSPHERIC CONSTITUENTS AND TO INFER THE TEMPERATURE STRUCTURE OF THE ATMOSPHERE. THE INSTRUMENT USED WAS A MICHELSON INTERFEROMETER WITH THE DESIRED SPECTRAL RESOLUTION AND RADIOMETRIC ACCURACY NEEDED FOR INDIRECT TEMPERATURE SOUNDINGS. THE IRIS EXPERIMENT WORKED SUCCESSFULLY FROM LAUNCH UNTIL IT FAILED ON JULY 22, 1969. A COMPLETE DESCRIPTION OF THE IRIS EXPERIMENT IS

CONTAINED IN THE 'NIMBUS III USER'S GUIDE,' WHICH IS AVAILABLE FROM NSSDC.  
FOR INFORMATION ON SPECIFIC DATA RECORDED BY THIS EXPERIMENT, SEE  
69-037A-03B.

DATA SET NAME- INFRARED INTERFEROMETER SPECTROMETER  
(IRIS) ARCHIVAL TAPES

NSSDC ID 69-037A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/15/69 TO 07/22/69

DATA SET BRIEF DESCRIPTION

IRIS RADIATION DATA ARE ON IBM 360/75, 9-TRACK, 1600-BPI, BINARY TAPES. EACH TAPE CONSISTS OF ONE FILE OF DATA CONTAINING DATA FROM ABOUT 10 ORBITS, WHICH ARE NOT SORTED ON THE TAPE. DATA RECORDS CONTAIN DOCUMENTATION INFORMATION, REFERENCE CALIBRATION, AVERAGE INSTRUMENT TEMPERATURE, CALIBRATED ATMOSPHERIC SPECTRUM, AND A SUMMARY FOR EACH ORBITAL PASS. AT THE PRESENT TIME, APPROXIMATELY 100 TAPES ARE AVAILABLE FOR ORBITS 20 TO 1331. THESE TAPES ARE CONSIDERED AS PRELIMINARY, HOWEVER, AND WILL BE REPLACED WHEN FINAL TAPES BECOME AVAILABLE.

DATA SET NAME- DATA CATALOG OF EXPERIMENT OPERATIONS

NSSDC ID 69-037A-03B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/22/69 TO 07/22/69

DATA SET BRIEF DESCRIPTION

THE 'NIMBUS III DATA CATALOG' CONSISTS OF A SERIES (CURRENTLY FIVE VOLUMES) PUBLISHED BY NASA TO DOCUMENT DATA ACQUIRED BY THE NIMBUS 3 METEOROLOGICAL SATELLITE. THE CATALOG IS DIVIDED INTO FIVE SECTIONS. VOLUME 1, PART 1, SECTION 1, CONTAINS PRELIMINARY EVALUATIONS OF ALL THE NIMBUS 3 EXPERIMENTS. IN THE REST OF THE VOLUMES, SECTION 1 IS A SUMMARY OF OPERATIONS OF ALL THE EXPERIMENTS DURING THE PERIOD OF TIME COVERED BY THE VOLUME. SECTION 2 IN ALL VOLUMES CONTAINS A TABULAR FORM OF THE ORBITAL ELEMENTS AND A LIST OF DAYS WHEN THE VARIOUS EXPERIMENTS WERE TURNED ON. SECTION 3 (SECTION 4 IN VOL. 1) DEPICTS DAILY PICTORIAL MONTAGES FROM THE IMAGE DISSECTOR CAMERA SYSTEM (IDCS). SECTION 4 (SECTION 5 IN VOL. 1) PICTORIALLY DOCUMENTS AND INDEXES THE DATA FROM THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) EXPERIMENT. THESE MONTAGES REPRESENT DAILY DATA FOR BOTH DAYTIME AND NIGHTTIME COVERAGE. ALL THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) PICTORIAL DATA ARE PRESENTED IN SECTION 5 (IN VOL. 1, PART 2). THE DATA CATALOG DOCUMENTS NIMBUS 3 DATA FOR THE FOLLOWING PERIODS -- VOL. 1, APRIL 22 TO MAY 31, 1969, VOL. 2, JUNE 1969, VOL. 3, JULY 1969, VOL. 4, AUGUST 1969, AND VOL. 5, SEPTEMBER 1 TO DECEMBER 31, 1969. THE INFRARED INTERFEROMETER SPECTROMETER (IRIS) EXPERIMENT FAILED ON JULY 22, 1969, SO ONLY THE FIRST THREE VOLUMES ARE APPLICABLE. SECTION 5 OF THE 'NIMBUS III USER'S GUIDE' CONTAINS A COMPLETE DESCRIPTION OF THE IRIS EXPERIMENT AND DATA AND SHOULD BE USED IN CONJUNCTION WITH THE DATA

CATALOG.

EXPERIMENT NAME- SATELLITE INFRARED SPECTROMETER (SIRS)

NSSDC ID 69-037A-04

ORIGINAL EXPERIMENT INSTITUTION- ESSA

INVESTIGATORS- D.Q. WARK, NOAA-NESC , SUITLAND, MD.  
D. HILLEARY, NOAA-NESC , SUITLAND, MD.  
J. LIENESCH, NOAA-NESC , SUITLAND, MD.  
P. CLARK, NOAA-NESC , SUITLAND, MD.

DATE LAST USEFUL DATA RECORDED- 06/21/70

EXPERIMENT BRIEF DESCRIPTION

THE SATELLITE INFRARED SPECTROMETER (SIRS) EXPERIMENT WAS DESIGNED TO MEASURE THE EARTH'S SPECTRAL RADIANCES IN THE CARBON DIOXIDE ABSORPTION BAND THAT ARE NEEDED FOR INFERENCE OF ATMOSPHERIC TEMPERATURES. SEVEN SPECTRAL CHANNELS CENTERED ABOUT THIS 15-MICRON CARBON DIOXIDE BAND WERE USED. ANOTHER CHANNEL, LOCATED BETWEEN 11 AND 14.5 MICRONS, WAS USED TO HELP SOLVE THE CASE WHERE PARTIAL CLOUDS EXISTED IN THE FIELD OF VIEW. A NINTH CHANNEL WAS USED TO MEASURE THE INTERNAL BLACKBODY REFERENCE FOR IN-ORBIT CALIBRATION. THE INSTRUMENT USED WAS A FASTIE-EBERT GRATING SPECTROMETER WITH SPECIAL WEDGE-IMMERSED THERMISTOR BOLMETER DETECTORS. THE SIRS EXPERIMENT WAS SUCCESSFUL, AND GOOD DATA WERE OBTAINED FROM LAUNCH THROUGH JUNE 21, 1970, WHEN THE EXPERIMENT WAS TURNED OFF AND ALL DATA ACQUISITION EFFORT WAS TRANSFERRED TO THE SIRS EXPERIMENT ON NIMBUS 4. A COMPLETE DESCRIPTION OF THE SIRS EXPERIMENT IS CONTAINED IN THE 'NIMBUS III USER'S GUIDE,' WHICH IS AVAILABLE FROM NSSDC. FOR INFORMATION ON SPECIFIC DATA RECORDED BY THIS EXPERIMENT, SEE 69-037A-04B.

DATA SET NAME- SIRS RADIANCE VALUES ON TAPE

NSSDC ID 69-037A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/14/69 TO 06/21/70

DATA SET BRIEF DESCRIPTION

THE SIRS RADIANCE VALUES ARE ON MAGNETIC TAPES GENERATED ON A CDC 6600 COMPUTER. THE TAPES ARE IN BINARY MODE, 7 TRACK, 556 BFI WITH ONE ORBIT OF DATA PER FILE. THE NUMBER OF FILES PER TAPE VARIES FROM 64 TO 118. THE FIRST RECORD OF EACH ORBIT CONTAINS INFORMATION IDENTIFYING THE ORBIT AND A SUMMARY OF THE INSTRUMENT STATUS THROUGHOUT THE ORBIT. THE FOLLOWING RECORDS CONTAIN THE RADIANCE VALUES ALONG WITH CALIBRATION DATA, LATITUDE, LONGITUDE, AND TIME OF EACH OBSERVATION. THE DATA TAPES PRESENTLY AVAILABLE ARE CONSIDERED PRELIMINARY AND WILL BE REPLACED AT A LATER DATE.

DATA SET NAME- DATA CATALOG OF EXPERIMENT OPERATIONS

NSSDC ID 69-037A-04B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/22/69 TO 12/31/69

DATA SET BRIEF DESCRIPTION

THE 'NIMBUS III DATA CATALOG' CONSISTS OF A SERIES (CURRENTLY FIVE VOLUMES) PUBLISHED BY NASA TO DOCUMENT DATA ACQUIRED BY THE NIMBUS 3 METEOROLOGICAL SATELLITE. THE CATALOG IS DIVIDED INTO FIVE SECTIONS. VOLUME 1, PART 1, SECTION 1, CONTAINS PRELIMINARY EVALUATIONS OF ALL THE NIMBUS 3 EXPERIMENTS. IN THE REST OF THE VOLUMES, SECTION 1 IS A SUMMARY OF OPERATIONS OF ALL THE EXPERIMENTS DURING THE PERIOD OF TIME COVERED BY THE VOLUME. SECTION 2 IN ALL VOLUMES CONTAINS A TABULAR FORM OF THE ORBITAL ELEMENTS AND A LIST OF DAYS WHEN THE VARIOUS EXPERIMENTS WERE TURNED ON. SECTION 3 (SECTION 4 IN VOL. 1) DEPICTS DAILY PICTORIAL MONTAGES FROM THE IMAGE DISSECTOR CAMERA SYSTEM (IDCS). SECTION 4 (SECTION 5 IN VOL. 1) PICTORIALY DOCUMENTS AND INDEXES THE DATA FROM THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) EXPERIMENT. THESE MONTAGES REPRESENT DAILY DATA FOR BOTH DAYTIME AND NIGHTTIME COVERAGE. ALL THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) PICTORIAL DATA ARE PRESENTED IN SECTION 5 (IN VOL. 1, PART 2). THE DATA CATALOG DOCUMENTS NIMBUS 3 DATA FOR THE FOLLOWING PERIODS -- VOL. 1, APRIL 22 TO MAY 31, 1969, VOL. 2, JUNE 1969, VOL. 3, JULY 1969, VOL. 4, AUGUST 1969, AND VOL. 5, SEPTEMBER 1 TO DECEMBER 31, 1969. THE SATELLITE INFRARED SPECTROMETER (SIRS) EXPERIMENT ON NIMBUS 3 PRODUCED USABLE DATA UNTIL IT WAS TURNED OFF ON JUNE 21, 1970, WHEN THE NIMBUS 4 SIRS EXPERIMENT BEGAN TO TRANSMIT DATA. SECTION 6 OF THE 'NIMBUS III USER'S GUIDE' CONTAINS A COMPLETE DESCRIPTION OF THE SIRS EXPERIMENT, DATA, AND FORMAT OF THE SIRS ARCHIVAL TAPE (69-037A-04A) AND SHOULD BE USED IN CONJUNCTION WITH THE DATA CATALOG. THE SIRS PORTION OF SECTION 1 OF EACH VOLUME DISCUSSES VARIOUS PROBLEMS WITH THE EXPERIMENT AND DATA (LOCATION ERRORS, TAPE RECORDER DEGRADATION, HIGH NOISE LEVELS, AND PARITY ERRORS) AND WHAT WAS DONE TO CORRECT OR LESSEN THESE PROBLEMS TO KEEP OR MAKE THE DATA USABLE.

EXPERIMENT NAME- MEDIUM-RESOLUTION INFRARED RADIOMETER  
(MRIR)

NSSDC ID 69-037A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- A.W. MCCULLOCH, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- 09/25/70

EXPERIMENT BRIEF DESCRIPTION

THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) EXPERIMENT MEASURED THE INTENSITY AND DISTRIBUTION OF THE ELECTROMAGNETIC RADIATION EMITTED AND REFLECTED FROM THE EARTH AND ITS ATMOSPHERE IN FIVE SELECTED WAVELENGTH INTERVALS FROM 0.2 TO 23 MICRONS. DATA FOR HEAT BALANCE OF THE



EARTH-ATMOSPHERE SYSTEM WERE OBTAINED AS WELL AS WATER VAPOR DISTRIBUTION DATA, SURFACE OR NEAR-SURFACE TEMPERATURES, AND DATA ON SEASONAL CHANGES OF STRATOSPHERIC TEMPERATURE DISTRIBUTION. THE FIVE WAVELENGTH REGIONS WERE (1) THE 6.5- TO 7.0-MICRON CHANNEL WHICH COVERED THE 6.7-MICRON WATER VAPOR ABSORPTION BAND, (2) THE 10- TO 11-MICRON BAND WHICH OPERATED IN THE 'ATMOSPHERIC WINDOW,' (3) THE 14.5- TO 15.5-MICRON BAND WHICH COVERED THE 15-MICRON CARBON DIOXIDE ABSORPTION BAND, (4) THE 20- TO 23-MICRON CHANNEL WHICH COVERED THE SPECTRAL REGION CONTAINING THE BROAD ROTATIONAL ABSORPTION BANDS OF WATER VAPOR, AND (5) THE 0.2- TO 4.0-MICRON CHANNEL WHICH YIELDED INFORMATION ON THE INTENSITY OF REFLECTED SOLAR ENERGY. THE MRIR EXPERIMENT WAS SUCCESSFUL AND OPERATED NORMALLY FROM LAUNCH UNTIL FEBRUARY 5, 1970, WHEN THE RADIOMETER WAS TURNED OFF DUE TO A TELEMETRY CONFLICT. IT WAS TURNED ON AGAIN ON JULY 1, 1970, AND OBTAINED NEARLY COMPLETE WORLD COVERAGE DURING JULY WITH SOME DATA ORBITS MISSING DUE TO CONTINUED TELEMETRY CONFLICTS. DURING AUGUST AND SEPTEMBER 1970 (HURRICANE SEASON), THE MRIR WAS ON ESSENTIALLY FULL TIME TO COVER THE AREA FROM THE EQUATOR TO 70 DEG N AND FROM 10 DEG E TO 100 DEG W. ON SEPTEMBER 25, 1970, THE SATELLITE'S REAR HORIZON SCANNER FAILED, MAKING IT IMPOSSIBLE TO DETERMINE WHERE THE MRIR SENSOR WAS POINTING. FUTURE 'TURN ON' OF THE INSTRUMENT WAS RENDERED USELESS BY THIS FAILURE. A COMPLETE DESCRIPTION OF THE MRIR EXPERIMENT IS CONTAINED IN THE 'NIMBUS III USER'S GUIDE,' WHICH IS AVAILABLE FROM NSSDC. FOR INFORMATION ON SPECIFIC DATA RECORDED BY THIS EXPERIMENT, SEE 69-037A-05C.

DATA SET NAME- MRIR PHOTOFACSIMILE FILMS

NSSDC ID 69-037A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/14/69 TO 02/05/70

#### DATA SET BRIEF DESCRIPTION

THE MRIR PHOTO DISPLAYS ARE AVAILABLE AS 4- BY 5-IN. POSITIVE OR NEGATIVE FILM TRANSPARENCIES OR POSITIVE PAPER PRINTS. THE PHOTO DISPLAY WAS MADE UP OF PHOTOFACSIMILE FILM STRIPS OF EACH OF THE FIVE CHANNELS, GRIDDING, TIME, AND A CALIBRATION GRAY-SCALE STRIP. PRINTS OF THESE PHOTOFACSIMILE DATA ARE CONTAINED IN DATA SET 69-037A-05C.

DATA SET NAME- MRIR METEOROLOGICAL RADIATION TAPES

NSSDC ID 69-037A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/14/69 TO 02/04/70

#### DATA SET BRIEF DESCRIPTION

THE MRIR DATA ARE AVAILABLE ON MAGNETIC TAPES CALLED NIMBUS METEOROLOGICAL RADIATION TAPES - MRIR (NMRT-MRIR). THE TAPES ARE COMPATIBLE WITH THE IBM 360 COMPUTER SYSTEM AND CONTAIN CALIBRATED RADIATION DATA FROM ALL FIVE CHANNELS OF THE MRIR. THE DATA ARE IN BINARY MODE AT A DENSITY OF 800 BPI.

ON THE NMRT-MRIR, EACH DATA MEASUREMENT HAS BEEN CONVERTED TO EQUIVALENT UNITS OF ENERGY, LATITUDES AND LONGITUDES HAVE BEEN COMPUTED FOR LOCATOR POINTS, AND ORBITAL AND TELEMETRY DATA HAVE BEEN COMPUTED AS A FUNCTION OF TIME. THERE IS ONE FILE FOR EACH ORBIT OF DATA. THE FIRST RECORD IN EACH FILE CONTAINS THE DOCUMENTATION FOR THE SUCCEEDING DATA RECORDS. THE FORMAT OF THE NMRT-MRIR IS PRESENTED IN SECTION 4 OF THE 'NIMBUS III USER'S GUIDE.' DUE TO THE LARGE VOLUME OF NIMBUS 3 MRIR DATA RECORDED, THE DIGITAL DATA ARE NOT ROUTINELY REDUCED TO NMRT-MRIR FORMAT. ONLY THOSE DATA SPECIFICALLY REQUESTED BY A USER WILL BE PROCESSED, AND A LONGER THAN NORMAL TIME WILL BE REQUIRED FOR NSSDC TO RESPOND TO A REQUEST.

DATA SET NAME- DATA CATALOG OF EXPERIMENT OPERATIONS

NSSDC ID 69-037A-05C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/22/69 TO 12/31/69

DATA SET BRIEF DESCRIPTION

THE 'NIMBUS III DATA CATALOG' CONSISTS OF A SERIES (CURRENTLY FIVE VOLUMES) PUBLISHED BY NASA TO DOCUMENT DATA ACQUIRED BY THE NIMBUS 3 METEOROLOGICAL SATELLITE. THE CATALOG IS DIVIDED INTO FIVE SECTIONS. VOLUME 1, PART 1, SECTION 1, CONTAINS PRELIMINARY EVALUATIONS OF ALL THE NIMBUS 3 EXPERIMENTS. IN THE REST OF THE VOLUMES, SECTION 1 IS A SUMMARY OF OPERATIONS OF ALL THE EXPERIMENTS DURING THE PERIOD OF TIME COVERED BY THE VOLUME. SECTION 2 IN ALL VOLUMES CONTAINS A TABULAR FORM OF THE ORBITAL ELEMENTS AND A LIST OF DAYS WHEN THE VARIOUS EXPERIMENTS WERE TURNED ON. SECTION 3 (SECTION 4 IN VOL. 1) DEPICTS DAILY PICTORIAL MONTAGES FROM THE IMAGE DISSECTOR CAMERA SYSTEM (IDCS). SECTION 4 (SECTION 5 IN VOL. 1) PICTORIAL DOCUMENTS AND INDEXES THE DATA FROM THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR) EXPERIMENT. THESE MONTAGES REPRESENT DAILY DATA FOR BOTH DAYTIME AND NIGHTTIME COVERAGE. ALL THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR) PICTORIAL DATA ARE PRESENTED IN SECTION 5 (IN VOL. 1, PART 2). THE DATA CATALOG DOCUMENTS NIMBUS 3 DATA FOR THE FOLLOWING PERIODS -- VOL. 1, APRIL 22 TO MAY 31, 1969, VOL. 2, JUNE 1969, VOL. 3, JULY 1969, VOL. 4, AUGUST 1969, AND VOL. 5, SEPTEMBER 1 TO DECEMBER 31, 1969. THE MRIR PHOTOS IN SECTION 5 (IN VOL. 1, PART 2) REPRESENT THE 4- BY 5-IN. NEGATIVES THAT ARE AVAILABLE (69-037A-05A). BACKGROUND INFORMATION CONCERNING THE MRIR EXPERIMENT AND DATA CAN BE FOUND IN SECTION 4 OF THE 'NIMBUS III USER'S GUIDE' AND IN THE MRIR PORTION OF SECTION 1 OF THE DATA CATALOG. THESE SECTIONS SHOULD BE REVIEWED BEFORE REQUESTING ANY OF THE MRIR DATA.

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SPACECRAFT NAME- APOLLO 10

NSSDC ID 69-043A

OTHER NAMES- PL-692F, 1969-C43A

LAUNCH DATE- 05/18/69

DATE LAST SCIENTIFIC DATA RECORDED- 05/26/69

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT-

9979 KG

ORBIT TYPE- SELENOCENTRIC EPOCH- 05/22/69 ORBIT PERIOD- 88 MIN.  
APOGEE- 1861 KM RAD PERIGEE- 1838 KM RAD INCLINATION- 12 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS THE SECOND APOLLO MISSION TO ORBIT THE MOON. CHECK OUT THE APOLLO SYSTEMS IN THE VICINITY OF THE MOON, AND OBTAIN NUMEROUS PHOTOGRAPHS OF THE LUNAR SURFACE. APOLLO 10 ACCOMPLISHED LUNAR ORBIT 4 DAYS AFTER THE MAY 18, 1969, LAUNCH. BOTH THE COMMAND SERVICE MODULE (CSM) AND THE LUNAR MODULE (LM), WHICH UNDOCKED AND CAME WITHIN 50,000 FT OF THE LUNAR SURFACE, PERFORMED SUCCESSFULLY. THE COMMAND MODULE (CM) AND CREW RETURNED TO EARTH ON MAY 26, 1969.

EXPERIMENT NAME- APOLLO 10 PHOTOGRAPHIC STUDIES

NSSDC ID 69-043A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-MSC

INVESTIGATORS- R.J. ALLENBY, NASA HEADQUARTERS , WASHINGTON, D.C.  
J.H. SASSER, NASA-MSC , HOUSTON, TEXAS

DATE LAST USEFUL DATA RECORDED- 05/26/69

EXPERIMENT BRIEF DESCRIPTION

APOLLO 10 CARRIED PHOTOGRAPHIC EQUIPMENT AND MATERIALS TO (1) OBTAIN PHOTOGRAPHS OF THE TRANSPOSITION, DOCKING, LUNAR MODULE EJECTION MANEUVER, AN LM RENDEZVOUS SEQUENCE FROM BOTH THE COMMAND AND LUNAR MODULES, (2) OBTAIN PHOTOS OF THE LUNAR GROUND TRACK AND OF LANDING SITE NO. 2 FROM THE LOW POINT OF THE LM FLIGHT PATH, (3) RECORD OPERATIONAL ACTIVITIES OF THE CREW, AND (4) OBTAIN LONG-DISTANCE EARTH AND LUNAR TERRAIN PHOTOGRAPHS. CAMERA EQUIPMENT CARRIED ABOARD APOLLO 10 CONSISTED OF TWO 70-MM HASSELBLAD CAMERAS, EACH FITTED WITH 80-MM F/2.8 ZEISS PLANAR LENSES, A 250-MM TELEPHOTO LENS STORED ABOARD THE COMMAND MODULE, AND ASSOCIATED EQUIPMENT (FILTERS, RINGSIGHT, SPOTMETER, AND AN INTERVALOMETER FOR STEREO STRIP PHOTOGRAPHY). FOR MOTION PICTURES, TWO 16-MM MAURER DATA ACQUISITION CAMERAS (ONE IN THE CSM AND ONE IN THE LM), WITH VARIABLE FRAME SPEED SELECTION, WERE USED. MOTION PICTURE CAMERA ACCESSORIES INCLUDED BAYONET-MOUNTED LENSES OF 75-, 18-, AND 5-MM FOCAL LENGTHS, A RIGHT-ANGLE MIRROR, A COMMAND MODULE BORESIGHT BRACKET, A POWER CABLE, AND AN ADAPTER FOR SHOOTING THROUGH THE SEXTANT. A DATA ANNOUNCEMENT BULLETIN PRESENTING THE PHOTOGRAPHIC COVERAGE AND FORMAT OF AVAILABLE DATA CAN BE OBTAINED FROM NSSDC BY REQUESTING NSSDC 65-14.

DATA SET NAME- COLOR MASTER POSITIVE 70-MM PHOTOS

NSSDC ID 69-043A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 05/21/69 TO 05/23/69

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF THREE MAGAZINES OF COLOR MASTER POSITIVES PRODUCED FROM THE ORIGINAL 70-MM HASSELBLAD PHOTOGRAPHY, WHICH USED EKTACHROME COLOR REVERSAL FILM TYPE SO-368. THE MAGAZINES CONTAIN 298 FRAMES OF LUNAR SURFACE PHOTOGRAPHY.

**DATA SET NAME-** COLOR 'B' WIND MASTER POSITIVE 16-MM  
PHOTOS

**NSSDC ID** 69-043A-01B

**AVAILABILITY OF DATA SET-** DATA AT NSSDC READY FOR DISTRIBUTION

**TIME SPAN OF DATA-** 05/21/69 TO 05/23/69

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET WAS PREPARED FROM 10 MAGAZINES OF EKTACHROME COLOR REVERSAL 16-MM FILM TYPE SO-368 AND ONE MAGAZINE OF COLOR INTERICR SO-168 FILM. EACH MAGAZINE WAS 100 FT IN LENGTH. MOST OF THE PHOTOS SHOW TARGETS OF OPPORTUNITY. THE MAGAZINES HAVE BEEN SPLICED ONTO ONE REEL, WITH THE CABIN AND EARTH PHOTOS SPLICED OUT.

**DATA SET NAME-** B/W PHOTOMETRIC POSITIVE 70-MM PHOTOS

**NSSDC ID** 69-043A-01C

**AVAILABILITY OF DATA SET-** DATA AT NSSDC READY FOR DISTRIBUTION

**TIME SPAN OF DATA-** 05/21/69 TO 05/23/69

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONTAINS 1021 FRAMES OF BLACK AND WHITE 70-MM PHOTOGRAPHS PRODUCED FROM THE ORIGINAL SIX MAGAZINES OF 3400 PANATOMIC-X AERIAL FILM. THE FILMS WERE PROCESSED ON A NIAGARA PRINTER TO PRODUCE A SET OF PHOTOGRAPHS SUITABLE FOR DETAILED PHOTOMETRIC AND PHOTOGRAMMETRIC INVESTIGATIONS. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER. THESE PHOTOGRAPHS SHOW THE AREAS OF PHOTOGRAPHIC COVERAGE LISTED IN THE EXPERIMENT DESCRIPTION.

**DATA SET NAME-** B/W LOGETRONIC POSITIVE 70-MM PHOTOS

**NSSDC ID** 69-043A-01D

**AVAILABILITY OF DATA SET-** DATA AT NSSDC READY FOR DISTRIBUTION

**TIME SPAN OF DATA-** 05/21/69 TO 05/23/69

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONTAINS REPRODUCTIONS OF THE PICTURES FOUND IN DATA SET

69-043A-01C. THE FILMS WERE PROCESSED ON A LOGETRONIC SP-1070 CONTACT PRINTER USING EXPOSURE CONTROL AND DODGING TECHNIQUES. THIS SET OF PICTURES OFFERS BETTER OVERALL CONTRAST THAN -01C, BUT THERE IS A LOSS IN RESOLUTION.

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SPACECRAFT NAME- APOLLO 11  
OTHER NAMES- PL-693H, 1969-059A

NSSDC ID 69-059A

LAUNCH DATE- 07/16/69 DATE LAST SCIENTIFIC DATA RECORDED- 07/24/69

AGENCY- NASA SPACECRAFT WEIGHT IN ORBIT- 28860 KG

ORBIT TYPE- SELENOCENTRIC EPOCH- 07/20/69 ORBIT PERIOD- 88 MIN.  
APOGEE- 1861 KM RAD PERIGEE- 1838 KM RAD INCLINATION- 32 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 11 SPACECRAFT WAS PART OF THE FIRST MISSION IN WHICH MEN LANDED ON THE LUNAR SURFACE AND RETURNED TO EARTH. THE SPACECRAFT CONSISTED OF THREE MODULES -- A COMMAND MODULE (CM), A LUNAR MODULE (LM), AND A COMMAND SERVICE MODULE (CSM). AFTER THE SPACECRAFT ORBITED THE MOON, THE LM AND CSM SEPARATED. TWO ASTRONAUTS IN THE LM LANDED ON THE LUNAR SURFACE AT THE SEA OF TRANQUILLITY (0.67 DEG N LATITUDE AND 23.49 DEG E LONGITUDE), WHILE ONE REMAINED IN LUNAR ORBIT IN THE COMMAND MODULE. SCIENTIFIC STUDIES WERE PERFORMED AND SOIL AND ROCK SAMPLES WERE ACQUIRED BY THE ASTRONAUTS DURING A MOONWALK. THE MEN RETURNED TO THE LM, DOCKED THE LM AND THE CSM, AND RETURNED TO EARTH. A LASER RANGING RETROREFLECTOR AND A PASSIVE SEISMOGRAPH EXPERIMENT WERE LEFT ON THE MOON. THE PERFORMANCE OF THE SPACECRAFT WAS EXCELLENT THROUGHOUT THE MISSION.

EXPERIMENT NAME- APOLLO 11 PHOTOGRAPHIC STUDIES

NSSDC ID 69-059A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-MSC

INVESTIGATORS- MAPPING SCIENCES LABORATORY , NASA-MSC , HOUSTON, TEXAS

DATE LAST USEFUL DATA RECORDED- 07/24/69

#### EXPERIMENT BRIEF DESCRIPTION

APOLLO 11 CARRIED PHOTOGRAPHIC EQUIPMENT AND MATERIALS TO (1) OBTAIN PHOTOGRAPHS OF THE TRANSPOSITION, DOCKING, LUNAR MODULE EJECTION MANEUVER, AND THE LM RENDEZVOUS SEQUENCE FROM BOTH THE COMMAND AND LUNAR MODULES, (2) OBTAIN PHOTOS OF THE LUNAR GROUND TRACK AND OF THE LANDING SITE FROM THE LOW POINT OF THE LM'S FLIGHT PATH, (3) RECORD THE OPERATIONAL ACTIVITIES OF THE CREW, (4) OBTAIN LONG-DISTANCE EARTH AND LUNAR TERRAIN PHOTOGRAPHS WITH 70-MM STILL CAMERAS, AND (5) OBTAIN PHOTOS OF LUNAR SURFACE FEATURES AND OF THE ACTIVITIES OF THE TWO ASTRONAUTS WHO LANDED ON THE MOON. THE CAMERA

EQUIPMENT CARRIED BY APOLLO 11 CONSISTED OF ONE 70-MM HASSELBLAD ELECTRIC CAMERA, TWO HASSELBLAD 70-MM LUNAR SURFACE SUPERWIDE-ANGLE CAMERAS, ONE HASSELBLAD EL DATA CAMERA, TWO 16-MM MAURER DATA ACQUISITION CAMERAS, AND ONE 35-MM LUNAR SURFACE STEREOSCOPIC CLOSEUP CAMERA. VARIOUS LENSES WERE USED WITH THESE CAMERAS FOR SPECIFIC TYPES OF PHOTOGRAPHY. THE PHOTOGRAPHS TAKEN INCLUDED 1359 FRAMES OF 70-MM FORMAT, 58,134 FRAMES OF 16-MM PHOTOGRAPHY, AND 17 STEREOSCOPIC PAIRS. A USERS' PACKAGE THAT CONTAINS DETAILED INFORMATION ABOUT THE PHOTOGRAPHIC EQUIPMENT AND COVERAGE, AVAILABILITY OF AND ORDERING PROCEDURES FOR PHOTOGRAPHY, AND PROOF PRINTS FOR THE APOLLO 11 PHOTOGRAPHY IS AVAILABLE FROM NSSDC. REQUESTERS SHOULD ASK FOR NSSDC 70-06.

DATA SET NAME- COLOR MASTER POSITIVE 70-MM PHOTOS

NSSDC ID 69-059A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/18/69 TO 07/22/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED FROM TWO MAGAZINES OF COLOR MASTER POSITIVES OF SO-368 FILM AND TWO MAGAZINES OF SO-168. THE TWO 70-MM FILM TYPES CONTAIN 299 AND 250 FRAMES, RESPECTIVELY. THESE FRAMES INCLUDE ALL AREAS OF PHOTOGRAPHIC COVERAGE LISTED IN THE EXPERIMENT DESCRIPTION. SEVERAL OF THE PHOTOGRAPHS WERE TAKEN FROM THE LM AND ON THE LUNAR SURFACE.

DATA SET NAME- COLOR 'B' WIND MASTER POSITIVE 16-MM  
PHOTOS

NSSDC ID 69-059A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/18/69 TO 07/22/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED FROM 13 MAGAZINES OF 16-MM COLOR MASTER POSITIVES. FIVE MAGAZINES WERE OF SO-368 COLOR FILM AND EIGHT WERE OF SO-168 COLOR FILM. THE MAGAZINES WERE SPLICED INTO TWO REELS, WITH THE CABIN AND EARTH PHOTOS SPLICED OUT. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER. THESE PHOTOGRAPHS INCLUDE THE LM AND CSM UNDOCKING AND DOCKING MANEUVERS, BOTH NEARSIDE AND FAR SIDE SURFACE FEATURES, AND HIGH- TO LOW-OBLIQUE PANORAMIC SEQUENCES TAKEN ON THE LUNAR FAR SIDE.

DATA SET NAME- COLOR STEREO POSITIVE 35-MM PHOTOS

NSSDC ID 69-059A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/20/69 TO 07/20/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 17 STEREOSCOPIC PAIRS OF 35-MM COLOR POSITIVE LUNAR SURFACE CLOSEUP PHOTOGRAPHS REPRODUCED FROM THE ORIGINAL SO-368 COLOR FILM. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER.

DATA SET NAME- B/W PHOTOMETRIC POSITIVE 70-MM PHOTOS

NSSDC ID 69-059A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/18/69 TO 07/22/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF BLACK AND WHITE 70-MM PHOTOGRAPHS IN PHOTOMETRIC POSITIVE FORM PRODUCED FROM THE ORIGINAL PANATOMIC-X 3400 FILM. THE FIVE AVAILABLE MAGAZINES CONTAIN 210 FRAMES THAT WERE PROCESSED ON A NIAGARA PRINTER. THIS SET OF FILMS IS BEST SUITED FOR PHOTOMETRIC AND PHOTOGRAMMETRIC ANALYSES. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER. MOST OF THESE NEARSIDE AND FAR SIDE LUNAR TERRAIN PHOTOGRAPHS WERE TAKEN FROM THE COMMAND MODULE WHILE IN LUNAR ORBIT.

DATA SET NAME- B/W LOGETRONIC POSITIVE 70-MM PHOTOS

NSSDC ID 69-059A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 07/18/69 TO 07/22/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF BLACK AND WHITE 70-MM PHOTOGRAPHS PRODUCED FROM THE ORIGINAL FILMS ON A LOGETRONIC SP-1070 CONTACT PRINTER USING EXPOSURE CONTROL AND DODGING TECHNIQUES. THE PICTURES IN THIS DATA SET ARE THE SAME AS THOSE IN DATA SET 69-059A-01D. THE OVERALL CONTRAST OF THESE PICTURES HAS BEEN IMPROVED, BUT THE RESOLUTION IS SLIGHTLY LOWER.

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SPACECRAFT NAME- APOLLO 12

NSSDC ID 69-099A

OTHER NAMES- PL-6931, 1965-699A

LAUNCH DATE- 11/14/69

DATE LAST SCIENTIFIC DATA RECORDED- 11/24/69

AGENCY- NASA

SPACECRAFT WEIGHT IN ORBIT-

28850 KG

ORBIT TYPE- SELENCENTRIC EPOCH- 11/18/69 ORBIT PERIOD- 88 MIN.  
APOGEE- 1861 KM RAD PERIGEE- 1838 KM RAD INCLINATION- 1.25 DEGREES

SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 12 SPACECRAFT WAS PART OF THE SECOND MISSION IN WHICH MEN LANDED ON THE MOON AND RETURNED TO EARTH. THE SPACECRAFT CONSISTED OF THREE MODULES -- A COMMAND MODULE (CM), A COMMAND SERVICE MODULE (CSM), AND A LUNAR MODULE (LM). THE LUNAR MODULE LANDED TWO MEN ON THE SURFACE OF THE MOON IN THE VICINITY OF SURVEYOR 3, WHILE THE PILOTED COMMAND MODULE CONTINUED IN ORBIT. AN APOLLO LUNAR SURFACE EXPERIMENTS PACKAGE (ALSEP) WAS PLACED ON THE LUNAR SURFACE. SAMPLES OF THE LUNAR TERRAIN WERE ACQUIRED, AND VARIOUS PHOTOGRAPHS OF 16-, 35-, AND 70-MM FILM SIZES WERE EXPOSED FROM THE LUNAR AND COMMAND MODULES AND BY THE ASTRONAUTS DURING LUNAR SURFACE ACTIVITIES. THE LM REJOINED THE COMMAND SERVICE MODULE FOR THE RETURN TO EARTH. PERFORMANCE WAS VERY GOOD FOR ALL ASPECTS OF THE MISSION.

EXPERIMENT NAME- APOLLO 12 PHOTOGRAPHIC STUDIES

NSSDC ID 69-099A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-MSC

INVESTIGATORS- MAPPING SCIENCES LABORATORY , NASA-MSC , HOUSTON, TEXAS

DATE LAST USEFUL DATA RECORDED- 11/24/69

EXPERIMENT BRIEF DESCRIPTION

APOLLO 12 CARRIED PHOTOGRAPHIC EQUIPMENT AND MATERIALS TO (1) OBTAIN PHOTOGRAPHS OF THE TRANSPOSITION, DOCKING, LUNAR MODULE EJECTION MANEUVER, AND THE LM RENDEZVOUS SEQUENCE FROM BOTH THE COMMAND AND LUNAR MODULES, (2) OBTAIN PHOTOS OF THE LUNAR GROUND TRACK AND OF THE LANDING SITE FROM THE LOW POINT OF THE LM'S FLIGHT PATH, (3) RECORD THE OPERATIONAL ACTIVITIES OF THE CREW, (4) OBTAIN LONG-DISTANCE EARTH AND LUNAR TERRAIN PHOTOGRAPHS WITH 70-MM STILL CAMERAS, AND (5) OBTAIN PHOTOS OF LUNAR SURFACE FEATURES AND OF THE ACTIVITIES OF THE ASTRONAUTS WHO LANDED ON THE MOON. THE CAMERA EQUIPMENT CARRIED BY APOLLO 12 CONSISTED OF ONE 70-MM HASSELBLAD ELECTRIC CAMERA, TWO HASSELBLAD DATA CAMERAS, TWO 16-MM MAURER DATA ACQUISITION CAMERAS, ONE 35-MM LUNAR SURFACE STEREOSCOPIC CLOSEUP CAMERA, AND A FOUR-CAMERA, MULTISPECTRAL, S-158 EXPERIMENT. VARIOUS LENSES WERE USED WITH THESE CAMERAS FOR SPECIFIC TYPES OF PHOTOGRAPHY. THE PHOTOGRAPHS INCLUDED 1584 FRAMES OF 70-MM FORMAT, 69,519 FRAMES OF 16-MM FORMAT, 15 STEREOSCOPIC PAIRS, AND 564 FRAMES OF PHOTOGRAPHY FROM THE S-158 EXPERIMENT. A USER'S PACKAGE CONTAINING DETAILED INFORMATION ABOUT THE PHOTOGRAPHIC EQUIPMENT AND COVERAGE, AVAILABILITY OF PHOTOGRAPHS, ORDERING PROCEDURES, AND PROOF PRINTS FOR THE APOLLO 12 PHOTOGRAPHY IS AVAILABLE FROM NSSDC. REQUESTERS SHOULD ASK FOR NSSDC 70-09, 70-10, AND 70-11.

DATA SET NAME- COLOR 'B' WIND MASTER POSITIVE 16-MM  
PHOTOS

NSSDC ID 69-099A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION



TIME SPAN OF DATA- 11/17/69 TO 11/21/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED FROM 15 MAGAZINES OF 16-MM COLOR MASTER POSITIVES. ALL OF THE MAGAZINES WERE OF SC-368 OR SC-168 COLOR FILM EXCEPT FOR ONE, WHICH WAS BLACK AND WHITE SO-164 FILM. THE MAGAZINES WERE SPLICED ONTO ONE REEL WITH THE CABIN AND EARTH PHOTOS SPLICED CUT. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER. THESE PHOTOGRAPHS SHOW THE AREAS OF PHOTOGRAPHIC COVERAGE LISTED IN THE EXPERIMENT DESCRIPTION.

DATA SET NAME- COLOR STEREO POSITIVE 35-MM PHOTOS

NSSDC ID 69-099A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/20/69 TO 11/20/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 15 STEREO PAIRS OF 35-MM COLOR POSITIVE CLOSEUP SURFACE PHOTOGRAPHY REPRODUCED FROM THE ORIGINAL SO-368 COLOR FILM. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER.

DATA SET NAME- COLOR MASTER POSITIVE 70-MM PHOTOS

NSSDC ID 69-099A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/17/69 TO 11/21/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED FROM TWO MAGAZINES OF SO-368 COLOR MASTER POSITIVES AND TWO MAGAZINES OF SO-168 FILM FROM THE APCLO 12 PHOTOGRAPHY. THE TWO 70-MM FILM TYPES CONTAIN 249 AND 307 FRAMES, RESPECTIVELY. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER. THESE PHOTOGRAPHS WERE TAKEN FROM THE COMMAND MODULE WHILE IN LUNAR ORBIT, FROM THE LM, AND ON THE LUNAR SURFACE. THE PHOTOS INCLUDE GENERAL NEARSIDE TERRAIN EXPOSURES SHOWING SEVERAL TARGETS OF OPPORTUNITY, DEPLOYMENT OF THE ALSEP, AND AREAS NEAR SURVEYOR 3.

DATA SET NAME- B/W PHOTOMETRIC POSITIVE 70-MM PHOTOS

NSSDC ID 69-099A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/17/69 TO 11/21/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF BLACK AND WHITE 70-MM PHOTOGRAPHS IN PHOTOMETRIC POSITIVE FORM PRODUCED FROM THREE MAGAZINES OF SO-164, TWO MAGAZINES OF SO-267, AND ONE MAGAZINE OF PANATOMIC-X 3400 FILM. THE SIX MAGAZINES CONTAIN 1021 FRAMES THAT WERE PROCESSED ON A NIAGARA PRINTER TO OBTAIN A RESOLUTION SUITABLE FOR PHOTOMETRIC AND PHOTOGRAMMETRIC ANALYSES. THIS DATA SET INCLUDES GENERAL TERRAIN PHOTOGRAPHY TAKEN FROM THE COMMAND MODULE WHILE IN LUNAR ORBIT AND LUNAR SURFACE PHOTOGRAPHY EXPOSED DURING THE SECOND EVA.

DATA SET NAME- B/W LOGETRONIC POSITIVE 70-MM PHOTOS

NSSDC ID 69-099A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/17/69 TO 11/21/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF BLACK AND WHITE 70-MM PHOTOGRAPHS PRODUCED FROM THE ORIGINAL FILMS AND PROCESSED FOR EXPOSURE CONTROL AND DODGING ON A LOGETRONIC SP-1070 PRINTER. IN THIS REPRODUCTION, OVERALL DETAIL IS IMPROVED, BUT THE RESOLUTION IS SLIGHTLY DEGRADED.

EXPERIMENT NAME- MULTISPECTRAL PHOTOS

NSSDC ID 69-099A-09

ORIGINAL EXPERIMENT INSTITUTION- NASA HEADQUARTERS

INVESTIGATORS- A.F.H. GOETZ, BELLCOMM LABS , WASHINGTON, D.C.

DATE LAST USEFUL DATA RECORDED- 11/20/69

EXPERIMENT BRIEF DESCRIPTION

THE S-158 MULTISPECTRAL EXPERIMENT CAMERA GROUP CONSISTED OF FOUR HASSELBLAD CAMERAS, SIDE-BY-SIDE ON A COMMON MOUNT, EACH FITTED WITH A DIFFERENT FILTER AND TYPE OF FILM. THE OBJECTIVE OF THE EXPERIMENT WAS TO OBTAIN PHOTOGRAPHS SHOWING LUNAR SURFACE COLOR VARIATIONS FOR USE IN GEOLOGIC MAPPING AND CORRELATION WITH SURFACE SAMPLES FROM SPECTRAL REFLECTANCE.

DATA SET NAME- B/W MULTISPECTRAL 70-MM PHOTOS

NSSDC ID 69-099A-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 11/18/69 TO 11/20/69

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED FROM ONE MAGAZINE OF INFRARED BLACK AND WHITE SD-246 FILM AND THREE MAGAZINES OF MEDIUM-SPEED BLACK AND WHITE FILM TYPE 3401. THE FILMS WERE EXPOSED WITH BLACK, BLUE, RED, AND GREEN FILTERS. FOUR CAMERAS SIMULTANEOUSLY PHOTOGRAPHED 114 FRAMES. THREE OF THE CAMERAS OBTAINED AN ADDITIONAL 36 FRAMES USING THE 3401 TYPE FILM. THE PHOTOGRAPHS WERE SUPPLIED BY THE PHOTOGRAPHIC TECHNOLOGY LABORATORY (PTL) AT THE MANNED SPACECRAFT CENTER. THE PHOTOGRAPHS ARE STEREO STRIPS, TAKEN SIMULTANEOUSLY, OF POTENTIAL LUNAR LANDING SITES.

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SPACECRAFT NAME- NIMBUS 4 NSSDC ID 70-025A  
OTHER NAMES- NIMBUS-D, 1970-025A, PL-701E

LAUNCH DATE- 04/08/70 DATE LAST SCIENTIFIC DATA RECORDED- STILL OPERATIONAL

AGENCY- NASA-OSSA SPACECRAFT WEIGHT IN ORBIT- 585 KG

ORBIT TYPE- GEOCENTRIC EPOCH- 05/04/70 ORBIT PERIOD- 107.1 MIN.  
APOGEE- 1097. KM ALT PERIGEE- 1090. KM ALT INCLINATION-99.9007 DEGREES

SPACECRAFT BRIEF DESCRIPTION

NIMBUS 4 WAS A LARGE, EARTH-ORIENTED SATELLITE WITH A NEARLY CIRCULAR SUN-SYNCHRONOUS POLAR ORBIT. IT MAINTAINED THIS ATTITUDE WITHIN PLUS OR MINUS 1 DEG ON EACH OF ITS AXES USING SMALL JET THRUSTERS. THE SPACECRAFT WAS TAILORED TO A METEOROLOGICAL MISSION WITH EXPERIMENTS SENSING THE ELECTROMAGNETIC SPECTRUM FROM THE ULTRAVIOLET THROUGH THE VISIBLE AND INFRARED REGIONS AND INTO THE ULTRAHIGH RADIO FREQUENCIES. THESE ADVANCED SENSORS DAILY OBSERVED THE EARTH'S ATMOSPHERE AND PROVIDED VERTICAL SOUNDINGS THROUGH THE EARTH'S ATMOSPHERE. THEY ALSO PROVIDED VERTICAL PROFILES OF TEMPERATURE, WATER VAPOR, AND OZONE VS PRESSURE ON A GLOBAL BASIS. AS OF MARCH 16, 1971, THE DIRECT READOUT CAPABILITY OF THE SATELLITE HAD BEEN PROGRAMMED OFF. OTHERWISE, THE SATELLITE CONTINUES TO OPERATE NORMALLY.

EXPERIMENT NAME- TEMPERATURE-HUMIDITY INFRARED NSSDC ID 70-025A-02  
RADIOMETER (THIR)

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

INVESTIGATORS- A.W. MCCULLOCH, NASA-GSFC, GREENBELT, MD.  
I.L. GOLDBERG, NASA-GSFC, GREENBELT, MD.

DATE LAST USEFUL DATA RECORDED- EXPERIMENT STILL OPERATIONAL

EXPERIMENT BRIEF DESCRIPTION

THE TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) EXPERIMENT CONSISTED OF

A TWO-CHANNEL HIGH-RESOLUTION RADIOMETER THAT DETECTED EMITTED THERMAL RADIATION IN TWO SPECTRAL REGIONS. ONE SENSOR MEASURED RADIATION IN THE 10.5- TO 12.5-MICRON 'WINDOW' CHANNEL (11.5-MICRON CHANNEL). FROM THIS, CLOUDTOP OR SURFACE TEMPERATURES COULD BE CALCULATED. THE SECOND SENSOR OPERATED PRIMARILY DURING NIGHTTIME IN THE 6.5- TO 7.0-MICRON WATER VAPOR CHANNEL (6.7-MICRON CHANNEL) AND GAVE RADIATING VALUES FROM WHICH TOTAL COLUMNAR VALUES OF ATMOSPHERIC MOISTURE COULD BE COMPUTED. THE THIR CONSISTED OF A SCANNING MIRROR AND A CASSEGRAIN TELESCOPE WITH A 12.5-CM PRIMARY MIRROR, A BEAM SPLITTER, AND FILTERS. GERMANIUM IMMERSED THERMISTOR BOLOMETERS WERE THE DETECTORS IN BOTH CHANNELS. AT AN ALTITUDE OF 1112 KM, BOTH CHANNELS HAD A SUBSATELLITE GROUND RESOLUTION OF 6.67 KM. FOR A COMPLETE DESCRIPTION OF THE EXPERIMENT, SEE SECTION 3 OF THE 'NIMBUS IV USER'S GUIDE.' THIR WAS INITIALLY SUCCESSFUL BUT FAILED ON ORBIT 3731. IT WAS RESTARTED ON ORBIT 3912 (JANUARY 29, 1971) AND CONTINUES TO OPERATE NORMALLY AS OF MARCH 22, 1971.

DATA SET NAME- THIR 11.5-MICRON PHOTOFACSIMILE FILM STRIPS

NSSDC ID 70-025A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/18/70 TO 05/22/70

DATA SET BRIEF DESCRIPTION

ALL THE NIMBUS 4 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) 11.5-MICRON (WINDOW) DATA PROCESSED TO DATE ARE AVAILABLE ON 70-MM PHOTOFACSIMILE FILM STRIPS. THE FILM STRIPS ARE AVAILABLE IN UNIFORM DENSITY EXPOSURE POSITIVE OR NEGATIVE COPIES IN EITHER TRANSPARENCIES OR PAPER PRINTS. EACH ORBIT IS SEPARATED INTO DAYTIME OR NIGHTTIME SWATHS. A FULL SWATH COVERS A DISTANCE APPROXIMATELY FROM POLE TO POLE. THE WIDTH OF EACH SWATH IS FROM HORIZON TO HORIZON AS THE THIR SCANNED NORMAL TO THE SUBSATELLITE PATH. RESOLUTION DECREASED AS THE DISTANCE FROM THE SUBSATELLITE POINT INCREASED. EACH FILM STRIP IS GRIDDED WITH GEOGRAPHIC COORDINATES AND IS IDENTIFIED BY ORBIT NUMBER, TIME, AND AN INDICATION OF WHETHER IT IS DAYTIME (D) OR NIGHTTIME (N). FOR A COMPLETE DESCRIPTION OF THE THIR PHOTOFACSIMILE FILM STRIPS, SEE SECTION 3.4.1 IN THE 'NIMBUS IV USER'S GUIDE,' WHICH CAN BE OBTAINED BY REQUEST TO NSSDC.

DATA SET NAME- THIR 6.7-MICRON PHOTOFACSIMILE FILM STRIPS

NSSDC ID 70-025A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/18/70 TO 05/22/70

DATA SET BRIEF DESCRIPTION

THE NIMBUS 4 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) 6.7-MICRON WATER VAPOR CHANNEL DATA ARE AVAILABLE ON 70-MM PHOTOFACSIMILE FILM STRIPS. THE FILM STRIPS ARE AVAILABLE IN UNIFORM DENSITY EXPOSURE POSITIVE OR NEGATIVE COPIES IN EITHER TRANSPARENCIES OR PAPER PRINTS. EACH ORBIT IS

SEPARATED INTO DAYTIME AND NIGHTTIME SWATHS. HOWEVER, THE 6.7-MICRON CHANNEL OPERATED MOSTLY AT NIGHT. A FULL SWATH COVERS A DISTANCE APPROXIMATELY FROM POLE TO POLE. THE WIDTH OF EACH SWATH IS FROM HORIZON TO HORIZON AS THE THIR SCANNED NORMAL TO THE SUBSATELLITE PATH. RESOLUTION DECREASED AS THE DISTANCE FROM THE SUBSATELLITE POINT INCREASED. EACH FILM STRIP IS GRIDDED WITH GEOGRAPHIC COORDINATES AND IS IDENTIFIED BY ORBIT NUMBER, TIME, AND AN INDICATION OF WHETHER IT IS DAYTIME (D) OR NIGHTTIME (N). FOR A COMPLETE DESCRIPTION OF THE THIR PHOTOFACSIMILE FILM STRIPS, SEE SECTION 3.4.1 IN THE 'NIMBUS IV USER'S GUIDE.'

DATA SET NAME- DATA CATALOG OF EXPERIMENT OPERATIONS

NSSDC ID 70-025A-02C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME SPAN OF DATA- 04/18/70 TO 06/30/70

#### DATA SET BRIEF DESCRIPTION

THE 'NIMBUS 4 DATA CATALOG' CONSISTS OF TWO VOLUMES PUBLISHED BY NASA TO DOCUMENT DATA ACQUIRED BY THE NIMBUS 4 METEOROLOGICAL SATELLITE. EACH VOLUME IS DIVIDED INTO FOUR SECTIONS. SECTION 1 IS A SUMMARY OF OPERATIONS OF ALL THE EXPERIMENTS DURING THE PERIOD COVERED BY THE VOLUME. SECTION 2 CONTAINS A TABULATION OF THE ORBITAL ELEMENTS AND LISTS THE TIME PERIODS WHEN THE VARIOUS EXPERIMENTS WERE TURNED ON. SECTION 3 DEPICTS DAILY PICTORIAL MONTAGES FROM THE IMAGE DISSECTOR CAMERA SYSTEM (IDCS). SECTION 4 PICTORIALLY DOCUMENTS AND INDEXES THE DATA FROM THE TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) EXPERIMENT. THESE MONTAGES REPRESENT THE DAILY DATA FROM BOTH THE 6.7- AND 11.5-MICRON CHANNELS AND INCLUDE BOTH DAYTIME AND NIGHTTIME COVERAGE. VOLUME 1 OF THE SERIES COVERS THE PERIOD APRIL 18 TO MAY 22, 1970, AND VOLUME 2 COVERS MAY 23 TO JUNE 30, 1970. SECTION 3 OF THE 'NIMBUS IV USER'S GUIDE' CONTAINS A COMPLETE DESCRIPTION OF THE THIR EXPERIMENT AND SHOULD BE USED IN CONJUNCTION WITH THE DATA CATALOG.

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SPACECRAFT NAME- APOLLO 13

NSSDC ID 70-029A

OTHER NAMES- PL-654F, PL-7010, SA-508, 1970-029A

LAUNCH DATE- 04/11/70

DATE LAST SCIENTIFIC DATA RECORDED- 04/17/70

AGENCY- NASA-OMSF

SPACECRAFT WEIGHT IN ORBIT-

9979 KG

ORBIT TYPE- SELENOCENTRIC

EPOCH- 04/14/70

ORBIT PERIOD-

88 MIN.

APOGEE- 2127 KM RAD

PERIGEE- 1844 KM RAD

INCLINATION-

1.25 DEGREES

#### SPACECRAFT BRIEF DESCRIPTION

APOLLO 13 WAS LAUNCHED ON APRIL 11, 1970, ON A SCHEDULED 10-DAY LUNAR LANDING MISSION. THE PURPOSES OF THE MISSION WERE (1) TO EXPLORE THE HILLY UPLAND FRA MAURO REGION OF THE MOON, (2) TO PERFORM SELENOLOGICAL

INSPECTION, SURVEY, AND SAMPLING OF MATERIAL IN THE FRA MAURO FORMATION, (3) TO DEPLOY AND ACTIVATE AN APOLLO LUNAR SURFACE EXPERIMENTS PACKAGE (ALSEP), (4) TO FURTHER DEVELOP MAN'S CAPABILITY TO WORK IN THE LUNAR ENVIRONMENT, AND (5) TO OBTAIN PHOTOGRAPHS OF CANDIDATE LUNAR EXPLORATION SITES. THESE GOALS WERE TO BE CARRIED OUT FROM A NEAR-CIRCULAR LUNAR ORBIT AND ON THE LUNAR SURFACE AT 3 DEG S LATITUDE, 17 DEG W LONGITUDE. BECAUSE OF A MALFUNCTION IN THE COMMAND SERVICE MODULE, WHICH MADE THE COMMAND MODULE (CM) UNUSABLE FOR THE MISSION, THE MISSION HAD TO BE ABORTED. THE CREW TRANSFERRED TO THE LUNAR MODULE AND PERFORMED A FREE-RETURN TRAJECTORY, RETURNING TO THE CM ONLY PRIOR TO ENTERING THE EARTH'S ATMOSPHERE. ALTHOUGH THE PLANNED MISSION OBJECTIVES WERE NOT REALIZED, A LIMITED AMOUNT OF PHOTOGRAPHIC DATA WAS OBTAINED.

EXPERIMENT NAME- APOLLO 13 PHOTOGRAPHIC STUDIES

NSSDC ID 70-029A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-MSC

INVESTIGATORS- MAPPING SCIENCES LABORATORY , NASA-MSC , HCUSTON, TEXAS

DATE LAST USEFUL DATA RECORDED- 04/16/70

#### EXPERIMENT BRIEF DESCRIPTION

THE PHOTOGRAPHIC OBJECTIVES OF THE APOLLO 13 MISSION WERE (1) TO PHOTOGRAPH TARGETS OF OPPORTUNITY (SCIENTIFICALLY INTERESTING SITES AND POTENTIAL APOLLO LANDING SITES), (2) TO OBTAIN VERTICAL AND OBLIQUE STEREO STRIPS OF NEARSIDE AND FAR SIDE REGIONS OF SCIENTIFIC INTEREST, (3) TO RECORD MISSION OPERATIONAL ACTIVITIES, INCLUDING THE OPERATIONS AND MANEUVERS OF THE COMMAND SERVICE MODULE, THE COMMAND MODULE, AND LUNAR MODULE, AND (4) TO OBTAIN PHOTOS OF LUNAR SURFACE FEATURES, BEFORE AND AFTER LANDING, AND LONG-DISTANCE EARTH PHOTOS. THE CAMERA EQUIPMENT CARRIED ON BOARD THE SPACECRAFT CONSISTED OF TWO 70-MM HASSELBLAD ELECTRIC CAMERAS, TWO 70-MM HASSELBLAD DATA CAMERAS, TWO 16-MM MAURER DATA ACQUISITION CAMERAS, ONE 35-MM LUNAR SURFACE STEREOSCOPIC CLOSEUP CAMERA, AND ONE HYCON TOPOGRAPHIC CAMERA. BECAUSE THE MISSION WAS ABORTED, ONLY THE TWO HASSELBLAD 70-MM ELECTRIC CAMERAS AND THE TWO MAURER DATA ACQUISITION CAMERAS WERE USED, AND PHOTOGRAPHIC COVERAGE INCLUDED ONLY A LIMITED AMOUNT OF LUNAR SURFACE PHOTOS AND PHOTOGRAPHS OF MISSION OPERATIONAL ACTIVITIES. THIS PHOTOGRAPHIC COVERAGE, WHICH IS OF GOOD TO FAIR QUALITY, INCLUDES 534 FRAMES OF 70-MM PHOTOGRAPHY AND 22,073 FRAMES OF 16-MM PHOTOGRAPHY.

DATA SET NAME- COLOR 'B' WIND MASTER POSITIVE 16-MM  
PHOTOS

NSSDC ID 70-029A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/12/70 TO 04/16/70

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 16-MM REEL OF FILM PREPARED FROM SO-368 COLOR

FILM THAT WAS EXPOSED WITH AN 18-MM LENS. THIS REEL CONTAINS THE USABLE FILM FROM FIVE MAGAZINES EXPOSED DURING THE MISSION. MOST OF THE PHOTOGRAPHS ARE LONG-DISTANCE PICTURES OF THE LUNAR DISC. CABIN AND EARTH PHOTOGRAPHY ARE NOT INCLUDED.

DATA SET NAME- COLOR MASTER POSITIVE 70-MM PHOTOS

NSSDC ID 70-029A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/12/70 TO 04/16/70

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS FOUR MAGAZINES OF MASTER POSITIVE 70-MM FILM PRODUCED FROM THE ORIGINALS. TWO MAGAZINES WERE PREPARED FROM SO-368 COLOR FILM AND CONTAIN 176 FRAMES. TWO WERE PREPARED FROM SO-168 COLOR FILM AND CONTAIN 213 FRAMES. THESE PHOTOGRAPHS COVER NEARSIDE MARES AND CRATERS AND FARSIDE CRATERS.

DATA SET NAME- B/W PHOTOMETRIC POSITIVE 70-MM PHOTOS

NSSDC ID 70-029A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME SPAN OF DATA- 04/12/70 TO 04/16/70

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS ONE MAGAZINE OF BLACK AND WHITE MASTER POSITIVE FILM PREPARED FROM PANATOMIC-X 3400 FILM. THE MAGAZINE CONTAINS 95 FRAMES THAT WERE PROCESSED ON A NIAGARA PRINTER AND ARE MOST SUITABLE FOR PHOTOMETRIC AND PHOTOGRAMMETRIC ANALYSES.

DATA SET NAME- B/W LOGETRONIC POSITIVE 70-MM PHOTOS

NSSDC ID 70-029A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME SPAN OF DATA- 04/12/70 TO 04/16/70

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE SAME MAGAZINE AS IN DATA SET 70-029A-01C PRODUCED ON A LOGETRONIC SP-1070 CONTACT PRINTER USING EXPOSURE CONTROL AND DODGING TECHNIQUES. THESE REPRODUCTIONS ENHANCED THE OVERALL CONTRAST, WHILE THE RESOLUTION IS SLIGHTLY LESS THAN IN THE -01C DATA SET.

## SECTION 2 - SUPPORTING DATA

This section of the Catalog contains descriptions of space environment models and programs that are distributed by the National Space Science Data Center. These are discussed under four major headings:

- Geomagnetism
- Magnetopause and Bow Shock Positions
- Magnetospherically Trapped Particles
- Ionosphere

For information on the procedures for ordering these models and programs, please refer to page vii in the Introduction to this Catalog.

### Geomagnetism

#### Geomagnetic Field Models

##### Jensen-Cain

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the Jensen-Cain geomagnetic field model. The coefficients are for epoch 1960.0 and are based on data gathered between 1945 and 1962. There are 48 nonzero coefficients extending up to  $n = m = 6$ . No time derivatives of the coefficients are included. The oblateness of the earth has not been considered in the determination of the coefficients. A discussion of this field model can be found in J. Geophys. Res., 67, 3586, 1962.

##### GSFC (9/65)

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the GSFC (9/65) geomagnetic field model. The coefficients are for epoch 1960.0 and are based on data gathered between 1945 and 1964. There are 99 nonzero coefficients extending up to  $n = m = 9$ . First time derivatives of the coefficients are included. The oblateness of the earth has been considered in the determination of the coefficients. A discussion of this field model can be found in J. Geophys. Res., 71, 346, 1966.



### GSFC (12/66)

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the GSFC (12/66) geomagnetic field model. The coefficients are for epoch 1960.0 and are based on data gathered between 1900 and 1966. There are 120 nonzero coefficients extending up to  $n = m = 10$ . First and second time derivatives of the coefficients are included. The oblateness of the earth has been considered in the determination of the coefficients. A discussion of this field model can be found in J. Geomag. and Geoelect., 19, 335, 1967.

### IGRF 1965.0 (geographic)

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the IGRF geomagnetic field model. The coefficients are for epoch 1965.0. There are 80 nonzero coefficients extending up to  $n = m = 8$ . First time derivatives of the coefficients are included. The oblateness of the earth has been considered in the determination of the coefficients. A discussion of this field model can be found in J. Geophys. Res., 74, 4407, 1969.

### IGRF 1965.0 (geomagnetic)

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion (in geomagnetic dipole coordinates) for the IGRF geomagnetic field model. The coefficients are for epoch 1965.0. There are 80 nonzero coefficients extending up to  $n = m = 8$ . First time derivatives of the coefficients are included. The oblateness of the earth has been considered in the determination of the coefficients. A discussion of this field model can be found in J. Geophys. Res., 75, 4372, 1970.

### POGO (3/68)

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the POGO (3/68) geomagnetic field model. The coefficients are for epoch 1960.0 and are based on POGO satellite data. There are 99 nonzero coefficients extending up to  $n = m = 9$ . First time derivatives of the coefficients are included. The oblateness of the earth has been considered in the determination of the coefficients. Later POGO models (10/68 and 8/69) are also available from NSSDC.

### POGO (10/68)

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the POGO (10/68) geomagnetic field model. The coefficients are for epoch 1960.0 and are based on POGO satellite data. There are 143 nonzero coefficients extending up to  $n = m = 11$ . First time derivatives of the coefficients are included. The oblateness of the earth has been considered in the determination of the coefficients. A later POGO model (8/69) is also available from NSSDC.

### POGO (8/69)

This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the POGO (8/69) geomagnetic field model. The coefficients are for epoch 1960.0 and are based on POGO satellite data gathered between 1965.7 and 1968.4. There are 120 nonzero coefficients extending up to  $n = m = 10$ . First time derivatives of the coefficients are included. The oblateness of the earth has been considered in the determination of the coefficients. A discussion of this field model can be found in J. Geophys. Res., 75, 4360, 1970.

## Geomagnetic Field Programs

### FIELDG

The FIELDG package, generated principally by Dr. J. C. Cain of GSFC, consists of a set of independently usable subroutines to compute the geomagnetic field vector at any specified spatial point given any of several available spherical harmonic expansions of the earth's internal-source field. Subroutine FIELDG initializes constants, reads coefficients, and executes transformations between input and output geodetic coordinates and internally used geocentric coordinates. The number of coefficients used in the computation is an input parameter to FIELDG. Subroutine FIELD, which may be called FIELDG, computes the geomagnetic field vector (in geocentric spherical polar components that are transformed to local geodetic Cartesian components by FIELDG) and its magnitude for a specified spatial point and time. There are two versions of FIELD; one executes faster, and the other requires less storage. Subroutine CONVRT can be used to convert Gauss-normalized coefficients to Schmidt-normalized coefficients, the former being used internally for computations. Coefficient card decks for the GSFC (12/66), IGRF 1965.0, and POGO (8/69) geomagnetic field models are sent with the FIELDG package to requesters. The full package thus consists of 542 cards. The programs in the FIELDG package are written in Fortran IV and are available in IBM 7094 or IBM 360 compatible card decks.

## TSFORM AND DIPFLD

TSFORM and DIPFLD are a pair of subroutines generated by Dr. G. D. Mead of GSFC to meet the requirements of those investigators performing studies in which the use of geomagnetic dipole coordinates is convenient. Subroutine TSFORM effects transformations between geographic and geomagnetic dipole coordinates for either positions or vector components. Subroutine DIPFLD computes the vector magnetic field at any spatial point, specified in geomagnetic dipole coordinates, using coefficients for the IGRF 1965.0 geomagnetic field model appropriate to those coordinates. (See J. Geophys. Res., 75, 4372, 1970, for a discussion of this model.) NSSDC has a deck of these coefficients. Thus, used as a package, these subroutines accept an input position given in geographic or geomagnetic coordinates and return vector magnetic field components in geographic or geomagnetic coordinates. NSSDC has a Fortran IV IBM 7094 program deck available for distribution.

## MDTILT

The MDTILT Fortran package was generated by Dr. W. P. Olson of McDonnell Douglas Corp. to compute, in solar magnetospheric coordinates, magnetospheric vector magnetic fields separately resulting from magnetopause and magnetotail current systems. The analysis allows for variable incident solar wind pressure and for an arbitrary tilt angle of the geomagnetic dipole axis with respect to the incident solar wind. Legendre polynomial expansions are used, with the two coefficients (one for each source current system) for a given  $n, m$  expanded as power series in the arbitrary tilt angle. The analysis is recommended for geocentric distances out to about 7 earth radii. It is anticipated that raw coefficients, not involving expansions in the tilt angle, will be submitted to NSSDC at some time. The availability of these data will extend the limits of validity of the analysis somewhat beyond 7 earth radii, especially in the antisolar direction. The MDTILT package consists of a brief main program and a series of subroutines in which the actual computations are done. Although the package was initially generated to run on a CDC 6600, it is readily adaptable to other machines because of the basic level of Fortran programming used.

## INVAR

The INVAR package, generated by Dr. C. E. McIlwain of UCSD, can be used to compute values of  $B$  and  $L$  at any desired spatial point (specified in geocentric spherical polar coordinates) with a specified accuracy up to some limit. Any one of several spherical harmonic expansions of the earth's internal-source geomagnetic field can be used. Subroutine INVAR controls the overall execution of the program. Subroutine NEWMAG (replaces the earlier subroutine MAGNET) computes the

magnetic field vector at a specified spatial point. This subroutine is called extensively by subroutines START and LINES. For a specified spatial point, subroutine START finds two additional spatial points on the same field line, and subroutine LINES finds additional points on that field line. These points extend essentially from the point of interest to its conjugate point. The input accuracy parameter controls the number of points (up to a maximum of 200). Subroutine INTEG determines the value of the integral invariant,  $I$ , for the specified point of interest by numerically integrating at the points chosen by START and LINES. Finally, subroutine CARMEL computes the shell parameter,  $L$ , from the integral invariant  $I$  and from  $B$ . NSSDC has available for distribution Fortran IV IBM 7094 and IBM 360 compatible program decks for this package. Computation time for one value of  $L$  is several hundred milliseconds using an IBM 7094. For a discussion of  $B$  and  $L$ , see J. Geophys. Res., 66, 3681, 1961.

### ALLMAG

The ALLMAG package, generated by E. G. Stassinopoulos and G. D. Mead of GSFC, condenses seven selected internal-source geomagnetic field models into one operational assembly, thus permitting successive selection of models and/or time periods during execution of a single program. Spatial points of interest may be input and output in geocentric or geodetic coordinates; field components may be output in geocentric or local geodetic Cartesian components. There are two versions of the field computation routine ALLMAG; one executes three times faster than the other. The package also includes a subroutine, LINTRA, for field line tracing and the calculation of conjugate intersect. A modified version of McIlwain's INVAR routine, called INVARA, is also available for computing the shell parameter  $L$ . ALLMAG is available in packages compatible with octal and hexadecimal machines. These Fortran IV programs have been successfully executed on UNIVAC 1108, CDC 6600, and IBM 360 machines.

### SHELL

SHELL is a Fortran package generated principally by G. Kluge of ESRO/ESOC. The package accepts as input the geocentric Cartesian coordinates or geodetic spherical polar coordinates of a spatial point of interest. It also accepts the coefficients (derived allowing for the earth's oblateness) for any one of several internal-source geomagnetic field models. The magnetic field vector (in geocentric Cartesian components from subroutine FELDC or in geodetic local Cartesian components from subroutine FELDG), the field magnitude  $B$ , and the shell parameter  $L$  (from subroutine SHELLC or subroutine SHELLG, where the two differ in input coordinates) can be computed. The SHELL package differs from McIlwain's INVAR package in that internal computations are executed in a coordinate system in which two of the independent variables are constants along dipole field lines. The very

limited variation in field magnitude along slightly nondipolar, transformed field lines leads to a very limited number of calls from SHELLC or SHELLG to FELDC or FELDG in the computation of the integral invariant I (from which L can be obtained using McIlwain's CARMEL subroutine). On an IBM 360/75, using an H level compiler with OPT = 2, a call to SHELLG typically requires 46 msec while a call to INVAR typically requires 70 msec. NSSDC has IBM 7094 and IBM 360 Fortran card decks for the SHELL package available for distribution.

#### INTEL

INTEL is a Fortran package generated principally by G. Kluge of ESRO/ESOC. The package requires as input the geocentric Cartesian coordinates or geodetic spherical polar coordinates of a spatial point of interest. It also requires a table of shell parameter (L) values previously evaluated for a discrete set of spatial points using a specific geomagnetic field model. The package contains the subroutines FELDC and FELDG that compute the magnetic field vector components in geocentric Cartesian coordinates or geodetic local Cartesian components, respectively. The subroutines INTEL C and INTEL G, which differ in input coordinates, compute L at the point of interest by interpolating among L values of the input table. On an IBM 360/75, using an H level compiler with OPT = 2, a call to INTEL G (which in turn calls FELDG in order to return both B and L) typically requires 12 msec while calls to SHELLG and INVAR require 46 msec and 70 msec, respectively. NSSDC has IBM 7094 and IBM 360 Fortran card decks of the INTEL package available for distribution. However, as of May 1971, only an input L table based on the IGRF 1965.0 model is available from NSSDC.

#### LINTRA

A geomagnetic field line tracing and conjugate intersect calculation computer program, LINTRA, generated by E. G. Stassinopoulos of GSFC, can be used to compute values of a field line passing through any given point on or above the earth's surface to its conjugate intersect or the intersect with a specified altitude level. LINTRA can use any one of several internal source geomagnetic field models. The program was designed with the intention of following the path of a line of force that starts from a selected position and moves in a direction that leads towards the opposite geomagnetic hemisphere. For origins lying above sea level, the tracing direction can be reversed in order to obtain the intersects in either hemisphere. The geocentric coordinates of the intersects, with the field strength and the field vector components at these locations, are calculated by LINTRA. The method used in these calculations is described in the NASA-GSFC document "Computer Codes for Geomagnetic Field Line Tracing and Conjugate Intersect Program," X-642-68-429, November 1968. The LINTRA

program was written in Fortran IV, and the card decks, produced on an IBM 029 card punching machine, are for use on an IBM 360/91.

### Magnetopause and Bow Shock Crossing Positions

This data set consists of a card deck containing magnetopause or bow shock positions as observed between 1963 and 1968 by the GSFC magnetic field experiments carried on the first six IMP spacecraft. The deck was provided to NSSDC by Dr. D. Fairfield of GSFC. There are 463 magnetopause position cards and 388 bow shock position cards. Each of these subsets is ordered by solar ecliptic longitude. Each card identifies the spacecraft, orbit number, time (to an accuracy of minutes), magnetopause or bow shock indicator, exact or average position indicator ("average" over multiple crossings), solar ecliptic Cartesian coordinates of the crossing point, radial distance and solar ecliptic longitude of the crossing point, distances of the crossing point from the solar ecliptic X and Z axes, crossing position as rotated to the ecliptic plane in the original meridian plane (X and Y given, with  $Z = 0$ ), and values of the immediately preceding position as rotated by 4 deg to allow for solar wind aberration.

### Magnetospherically Trapped Particles

#### Trapped Particle Model Environments

A series of model environments of geomagnetically trapped electrons and protons has been generated by Dr. J. I. Vette of GSFC and several co-workers. Each model environment is the synthesis of data obtained by several spacecraft, and each contains the electron or proton fluxes above a given energy ( $E_1$ ) and the spectral parameters to be used in determining fluxes above other energies within the specified range of validity of the model. Both the fluxes and spectral parameters are given over wide ranges in B, L space. The following model electron environments are currently available:

Environment Name	$E_1$ (Mev)	Energy Range (Mev)	Spatial Range	Data Base Temporal Range	Epoch
AE1	0.5	>0.3	$1.2 < L < 3.0$	1962 - 1963	7/63
AE2	0.5	0 - $\infty$	$1.2 < L < 6.2$	1962 - 1964	8/64
E68	0.5	0 - $\infty$	$1.2 < L < 6.2$	1962 - 1964	1968
AE3	---	0.01 - 5	$L = 6.6$	1959 - 1965	1964

The following model proton environments are currently available:

Environment Name	E <sub>1</sub> (Mev)	Energy Range (Mev)	Spatial Range	Data Base Temporal Range
AP1	34	30 - 50	1.2 < L < 2.8	1958 - 1963
AP2	15	15 - 30	1.2 < L < 3.0	1958 - 1963
AP3	50	>50	1.2 < L < 2.8	1958 - 1963
AP4	4	4 - 15	1.2 < L < 4.2	1962 - 1963
AP5	0.4	0.1 - 4	1.2 < L < 6.6	1961 - 1965
AP6*	4	4 - 30	1.2 < L < 4.0	1962 - 1965
AP7**	50	>50	1.15 < L < 3.0	1961 - 1966

\*Supersedes AP2 and AP4.  
 \*\*Supersedes AP3.

New inner and outer zone electron environments are currently being generated at NSSDC. Except for epoch 1968, data on the model environments have been published as a series of NASA documents (SP-3024) that are available from NSSDC. NSSDC can also supply a BCD tape or punched card decks containing the flux and energy spectrum functions of all model environments except AE3. See the discussion in the NSSDC Handbook of Correlative Data, NSSDC 71-05, February 1971, for further details.

### TRECO

TRECO is a computer program written in Fortran IV and available in card decks compatible with either the CDC 6600 or IBM 360 computer. Using a two-body orbit generator, TRECO first computes elliptic or circular orbits for earth satellites from an input set of orbit elements. Alternatively, it can read previously generated orbits stored on magnetic tape or punched cards. For any specified orbit, TRECO computes the daily accumulated flux of geomagnetically trapped electrons or protons at or above any specified energy above 0 or 1 Mev, respectively. One of several available trapped radiation model environments is used. A typical run on an IBM 360 computer requires about 1 min of CPU time for a single day of flux accumulations, exclusive of compilation time but including orbit generation time. The typical IBM 360 run also requires about 200K bytes of storage. The CDC version is discussed in NSSDC 68-02, which is available from NSSDC.

## Ionosphere

### Reduction Program for Ground-Based Ionospheric Soundings

This reduction program, developed by J. E. Jackson, is one of several basic programs that have been used for the reduction of ground-based ionosonde observations to electron density profiles. The program requires a number of virtual range vs frequency inputs (ordinarily 15 to 20) from the ionogram "O" and "X" traces, as well as the time of observation and the sounder location. A magnetic field model, contributed by Dr. J. C. Cain, is called by and provided with the program. This field model computes the field values necessary for the reduction. The electron density vs true height is computed from the O trace values. The X trace is then computed from this reduction for various starting densities (and E-valleys for daytime data). The results are compared with the X trace input data by computing differences and standard deviations. The most internally consistent profile can be selected by reviewing these statistics. An interpolation program provides values of electron density, at 10-km intervals of true height, for profile points above the E-valley. This program also provides interpolated values of true height at selected electron densities. The output for each computation also includes parabolic extrapolation of the profile up to the F2 maximum. This reduction program uses the parabolic-in-log (N) lamination procedure and assumes vertical propagation. The program was written in Fortran IV and can operate on an IBM 360/75 or 360/91. The program package consists of about 1000 cards and a listing of the program. The package also includes two samples of input data and listings of the expected corresponding output. More complete background material can be found in a NASA-GSFC document (X-71-625-186) by J. E. Jackson and in Radio Science, 2, p. 10, Oct. 1971.

### Reduction Program for Topside Ionograms

This reduction program for topside ionograms was developed by J. E. Jackson and is quite similar to the program used for the reduction of ground-based ionospheric soundings. The program requires a number of virtual range vs frequency inputs (ordinarily 10 to 20) from the topside ionogram "X" trace, as well as the time of observation and the satellite location (usually obtained from ephemeris data). A magnetic field model, contributed by Dr. J. C. Cain, is called by and provided with the basic program. This field model computes the field values necessary for the reduction. The output parameters are values of electron density and true height for each pair of input values. An interpolation sub-program provides values of electron density at 50-km intervals of true height and values of true height at selected electron densities. The reduction program uses the parabolic-in-log (N) lamination procedure and assumes vertical signal propagation. This



program was written in Fortran IV and will operate on an IBM 360/75 or 360/91. The program package consists of about 800 cards and a listing of the program. The package also includes samples of input data and of the outputs that should result from the program operation. A more complete description of this program is given in IEEE Proceedings, 57, 6, 960-976, 1966.

### SECTION 3 - INDEXES

Abstract of Section 1 - Data Description

Below and on the following pages is a listing of the names for all spacecraft, experiment, and data set brief descriptions included in Section 1, Data Description, of this Catalog. The order of these names is chronological, by spacecraft launch date, and is the same as the order of the entries in Section 1. The NSSDC ID number follows each name.

At the end of this list are three tables that indicate the period for which each of the 96 spacecraft described in this Catalog was operational. Table 1 shows the period of operation for earth-orbiting satellites with altitude at apogee less than 3000 km; Table 2 shows earth-orbiting satellites with altitude at apogee greater than or equal to 3000 km. Solar-orbiting and lunar-orbiting spacecraft are shown in Table 3. In all tables, the spacecraft are listed in alphabetic order by common name, with alternate names given for some spacecraft in the Explorer series. The inclination of each spacecraft is also shown.

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Table 1

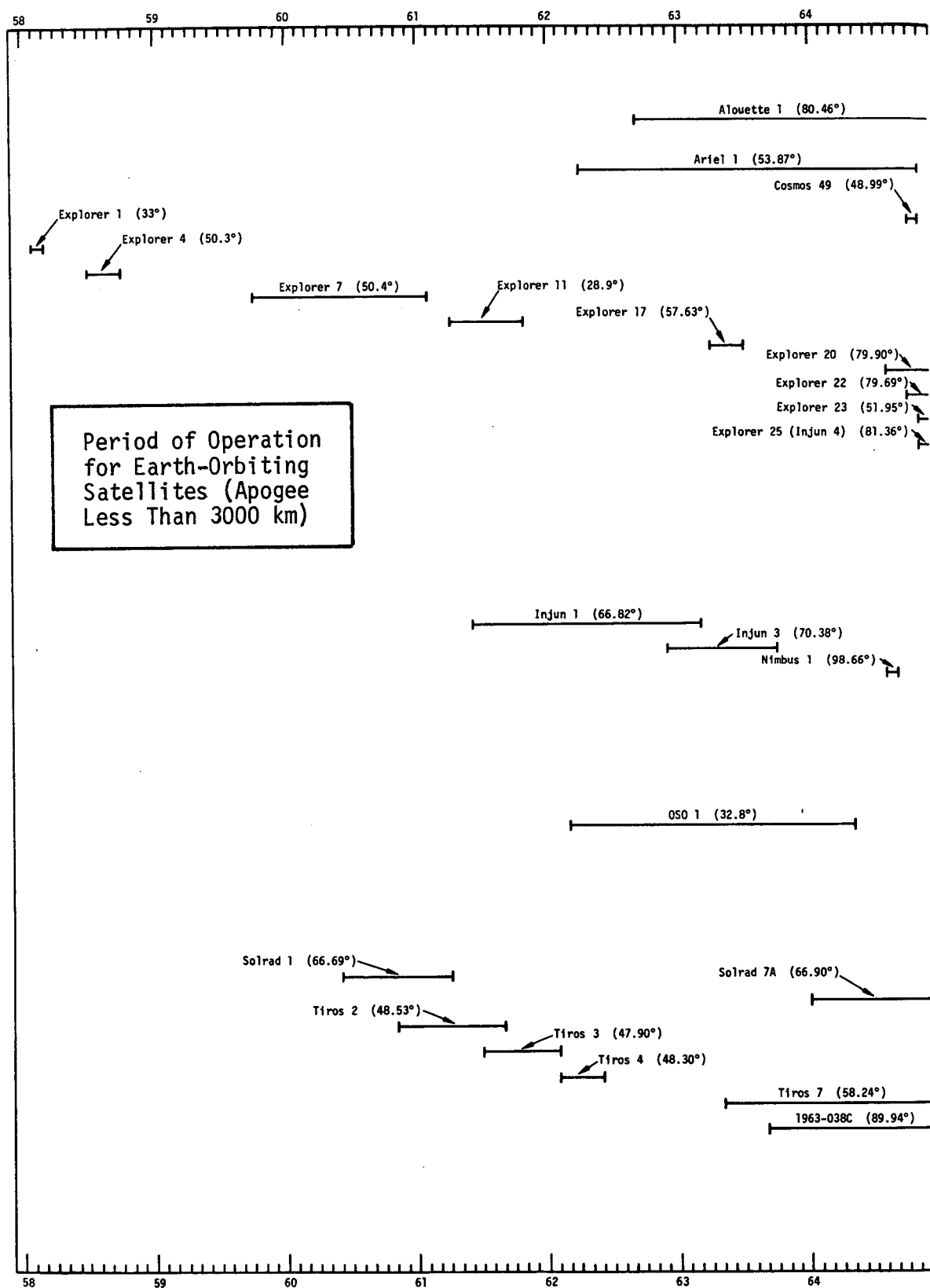


Table 1

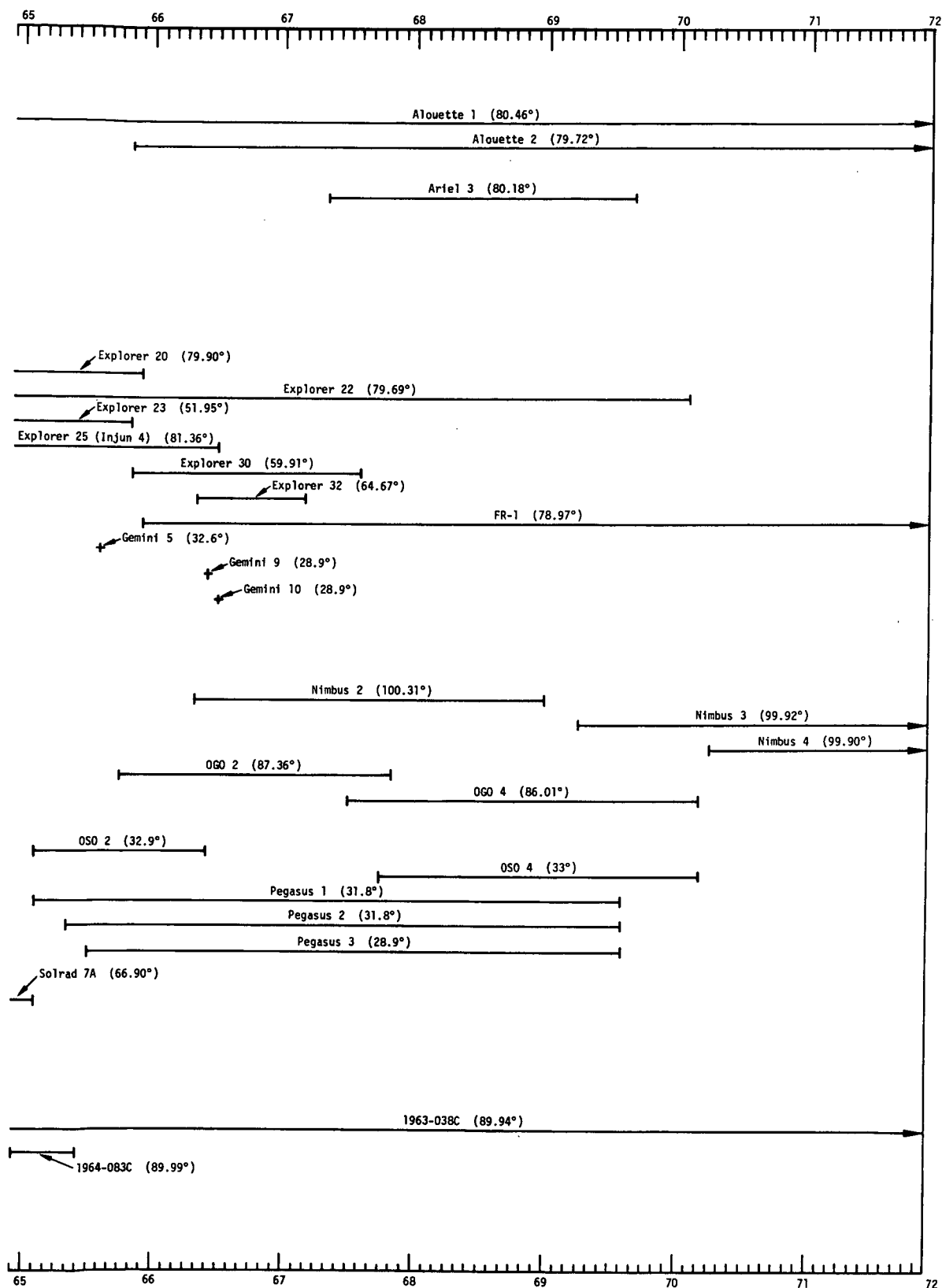




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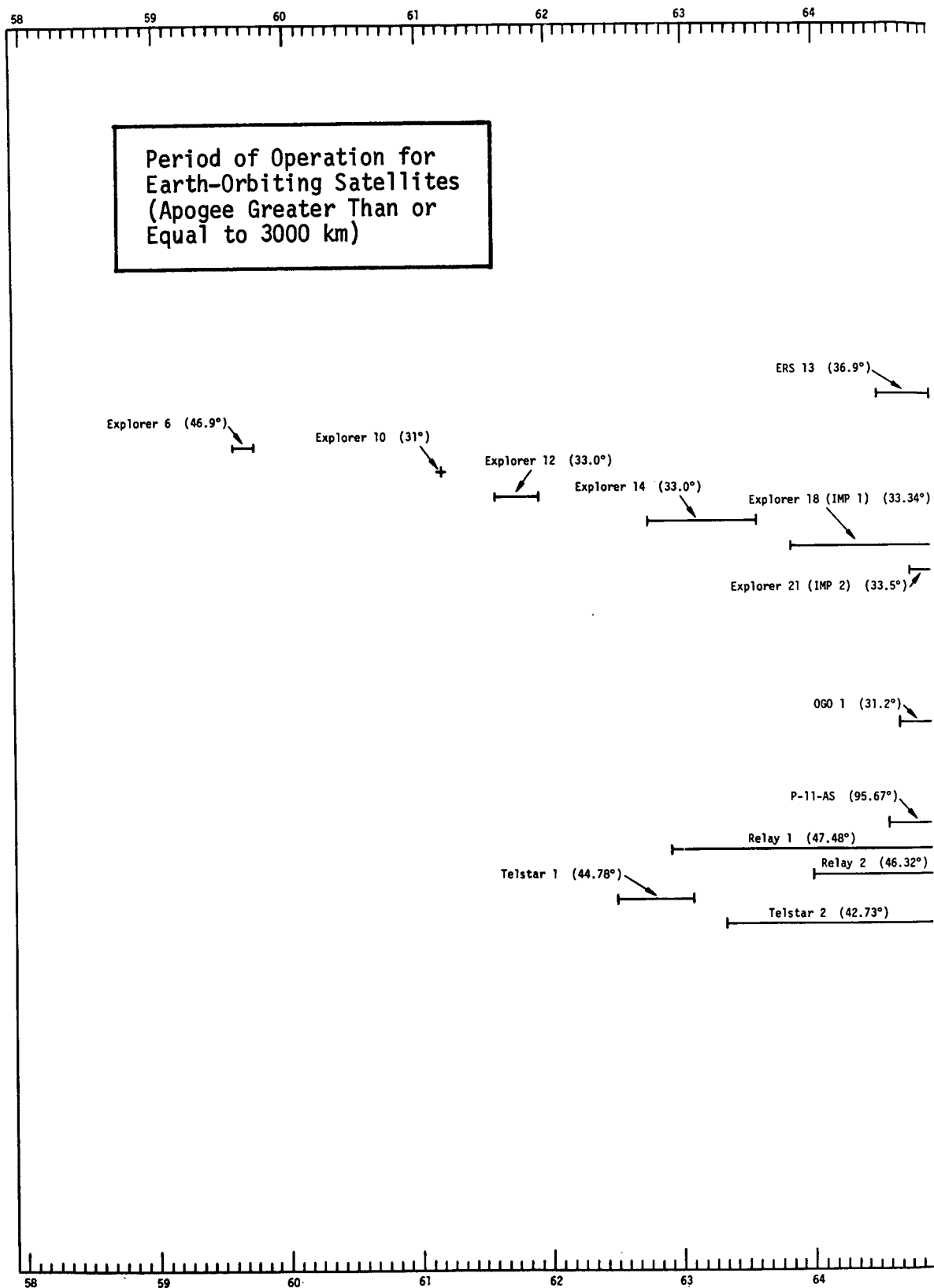


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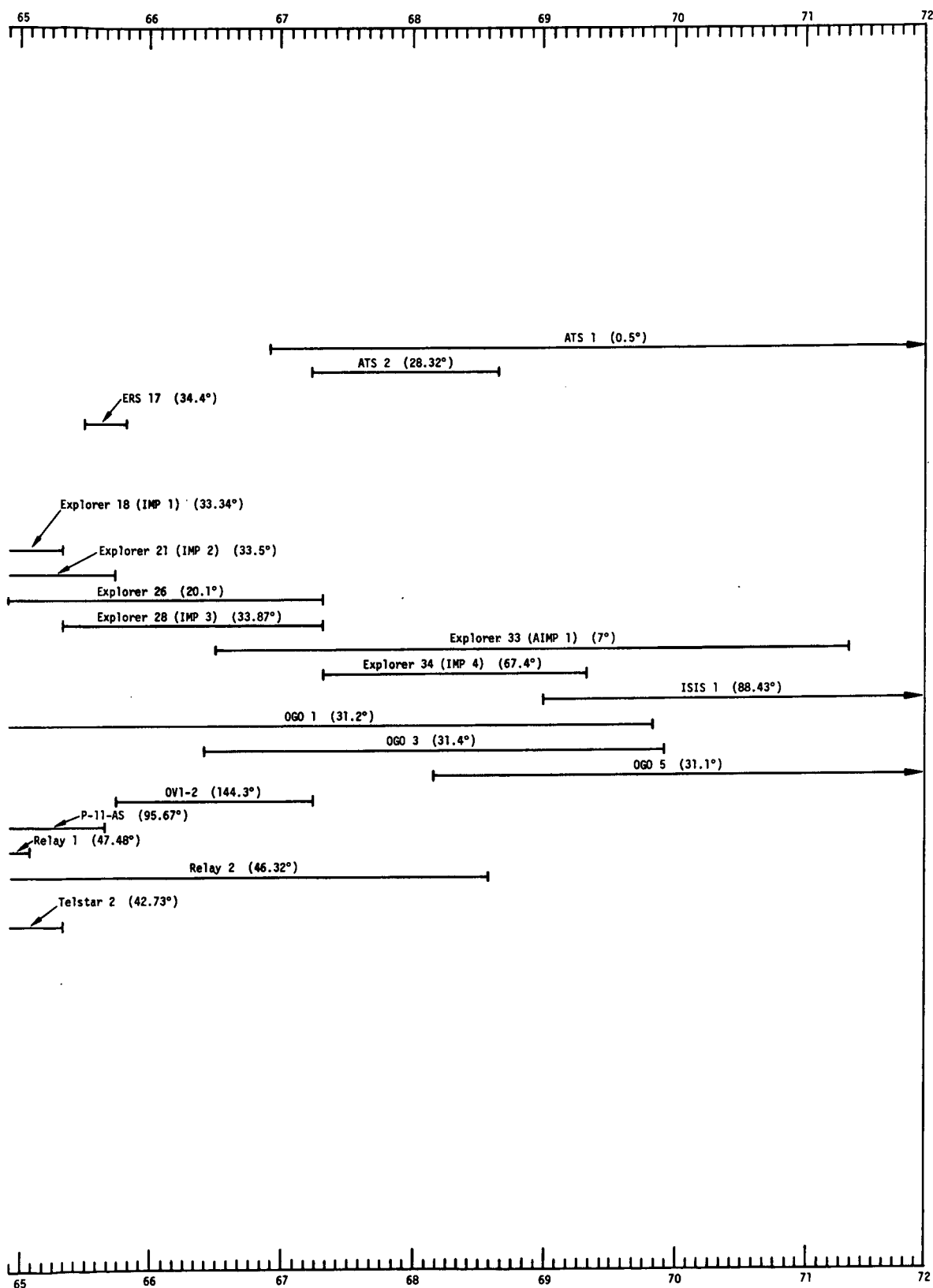


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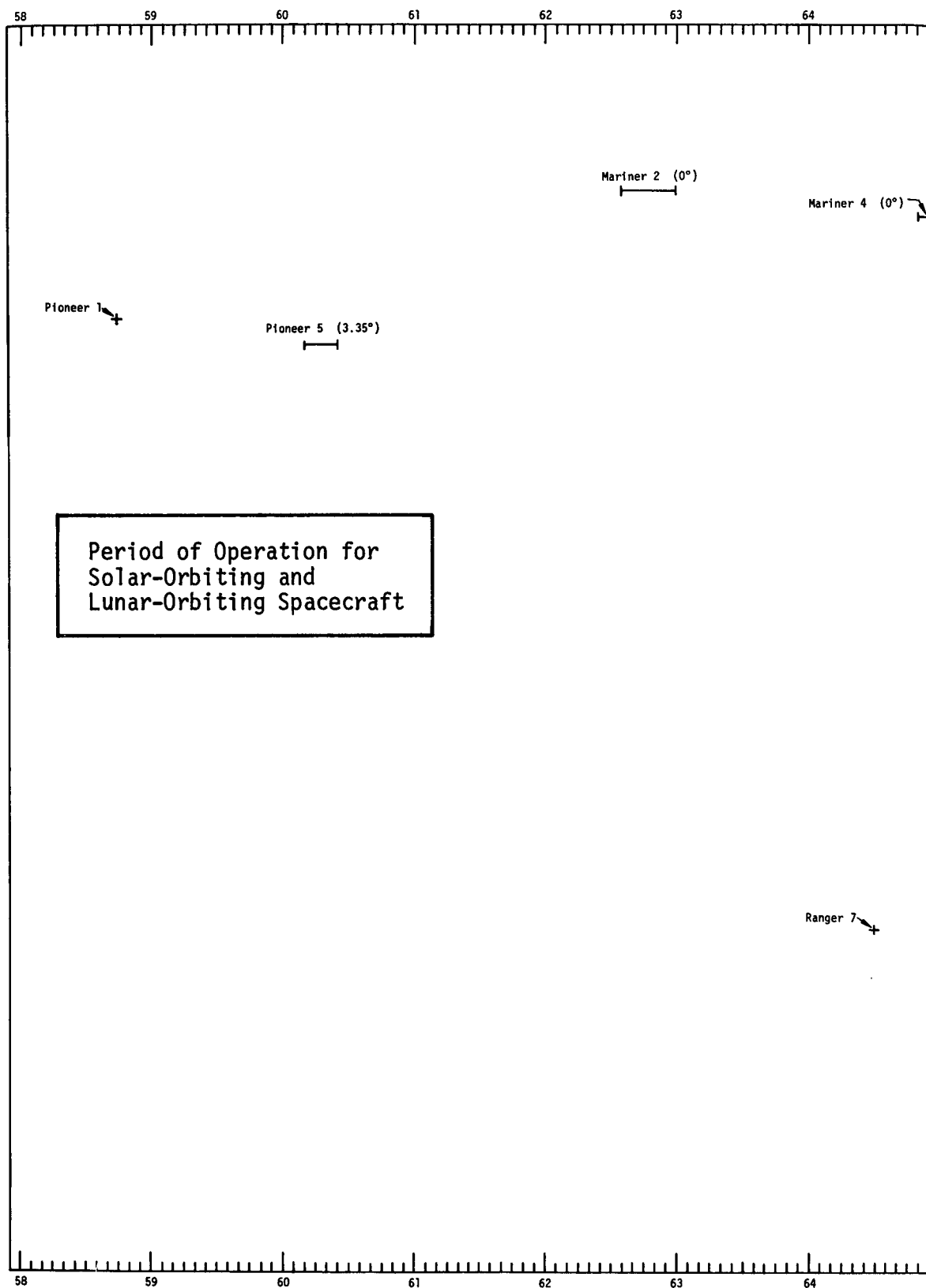
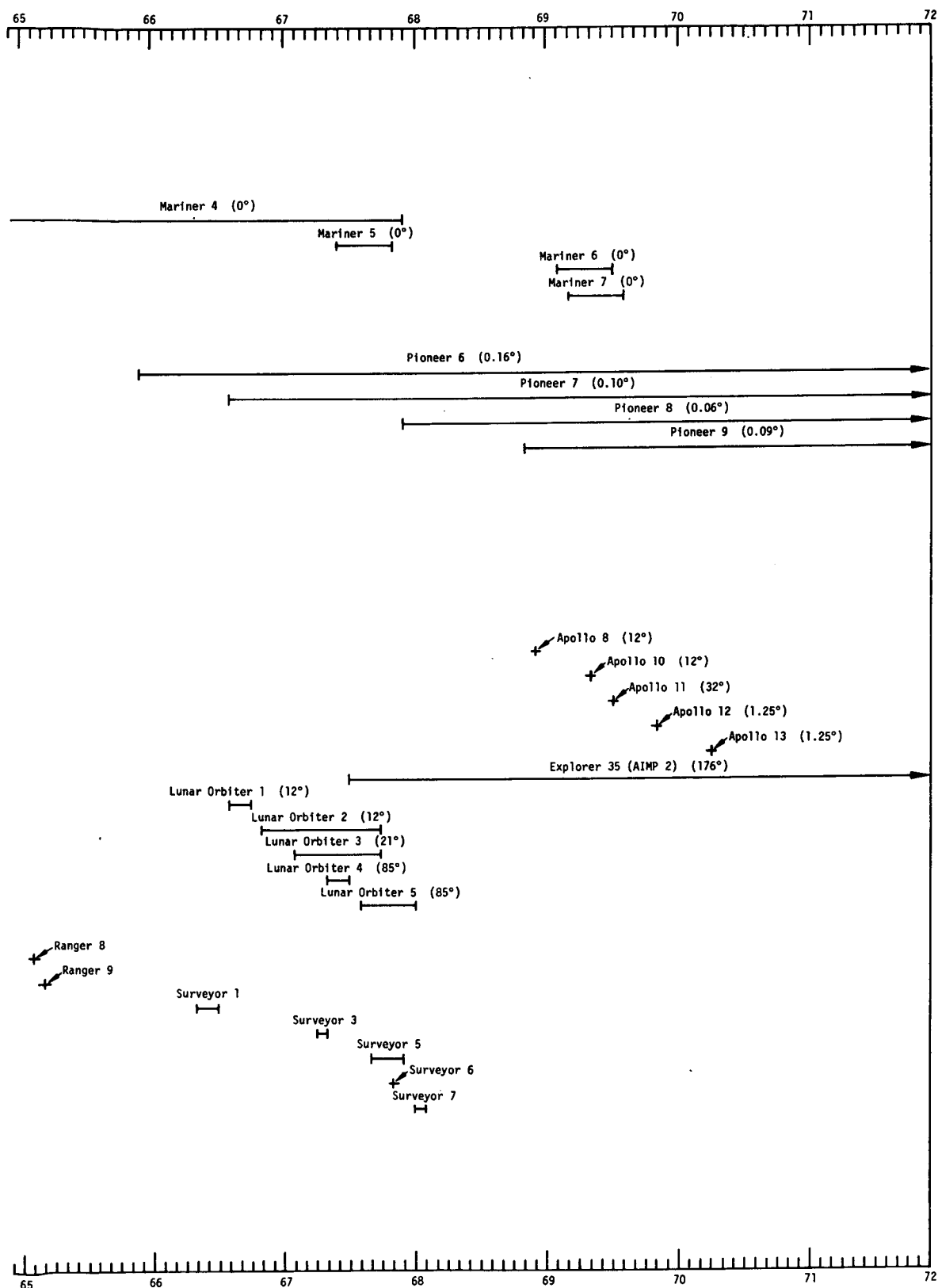


Table 3



Spacecraft Index

In the index that follows, all spacecraft described in Section 1 of this Catalog are listed, in alphabetic order, by common name and alternate names. For each alternate name, the common name is also given. The NSSDC ID number follows each name listed.

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## Phenomenon Measured Index

The index on the following pages lists all experiments described in Section 1 ordered by phenomenon measured. The phenomena measured are divided into seven major categories that in turn are divided into minor categories. A complete list of the seven major categories and 26 minor categories used in the NSSDC Automated Internal Management System is given below. In the index, each experiment is listed under each minor category to which its measurements relate. Thus, a given experiment may be listed in more than one category and more than once in a category. The ordering for all experiments in a minor category is given with the title for that category. Other information given for each experiment includes experiment identification, the limiting dates of data in NSSDC data sets, and under some categories, the quantity measured and/or regions sampled or sources sensed.

1. Gravitational Measurements
  - 1.1 Celestial Mechanics
  - 1.2 Selenodesy
  - 1.3 Geodesy
2. Electromagnetic Field and Wave Measurements (Frequency Less Than 3000 GHz)
  - 2.1 Magnetic Field Component
  - 2.2 Electric Field Component
3. Photon Measurements (Energy Greater Than .001 ev, Wavelength Less Than 1 mm)
  - 3.1 Which Sense Terrestrial and Atmospheric Sources Below 80-km Altitude
  - 3.2 Which Sense Sources in the Ionosphere, 80- to 3000-km Altitude (Airglow, Aurora, etc.)
  - 3.3 Which Sense Sources in the Magnetosphere above 3000-km Altitude
  - 3.4 Which Sense Sources in Interplanetary Space (Zodiacal Light, etc.)
  - 3.5 Which Sense Lunar or Planetary Sources
  - 3.6 Which Sense Solar or Stellar Sources
4. Charged Particle Measurements
  - 4.1 Which Sense Electrons
  - 4.2 Which Sense Protons or Hydrogen Ions
  - 4.3 Which Sense Nuclei or Ions, Z Greater Than 1

5. Neutral Particle Measurements
  - 5.1 Neutrons
  - 5.2 Atoms and Molecules
6. Macroscopic Particle Measurements
  - 6.1 Micrometeorites
  - 6.2 Comets
7. Planetary (or Lunar) Body Measurements
  - 7.1 Pictures of Surface and/or Clouds
  - 7.2 Seismic Waves
  - 7.3 Distance to Body
  - 7.4 Electromagnetic Properties
  - 7.5 Temperatures
  - 7.6 Surface Mechanical Properties
  - 7.7 Surface Chemical Properties
  - 7.8 Samples Returned to Earth for Study

#### Abbreviations Used

In the phenomenon measured index, the following abbreviations are used. In some cases, the abbreviations are unique to this index and may differ from those used elsewhere in this Catalog.

ang	-	angstrom
ev	-	electron volts*
Hz	-	hertz*
mic	-	micron
vq	-	volts per unit charge*
DENS	-	particle density is measured
FLUX	-	particle flux is measured
IONI	-	particle ionization rate is measured (as with an ionization chamber)
N/UAC	-	electron number density per unit area column is measured
R	-	particle sensed is resolved from other species
(spec)	-	information on the spectrum within the indicated frequency, wavelength, or energy band is contained in the data
U	-	particle sensed is not resolved from other species

---

\*These abbreviations for units are also used with the prefix letters k for thousand, M for million, and G for billion.

## Regions Sampled/Sources Sensed Codes

The regions sampled or sources sensed are indicated by the following letter and digit codes.

T - the earth and atmosphere below 80-km altitude

The following four digits refer to the ionospheric region between geographic altitudes of 80 and 3000 km.

- 1 - equatorial (less than 45° latitude)
- 2 - mid-latitude (45° to 65°)
- 3 - auroral zone (65° to 70°)
- 4 - polar cap (greater than 70°)

The magnetosphere above 3000-km altitude is divided into the following four L-value regions.

- A - inner belt (less than 2 earth radii)
- B - outer belt (2 to 6 earth radii)
- C - quasi-trapping region (6 to 10 earth radii)
- D - polar cap and magnetotail field lines (greater than 10 earth radii)

Other codes are as follows.

- I - interplanetary
- L - lunar
- M - Martian
- V - Venusian
- S - solar
- C - celestial (sources outside the solar system)



# Phenomenon Measured Index

LIMITING DATES OF DATA IN NSSDC DATA SETS				REGIONS SAMPLED OR SOURCES SENSED*	
MIN. MAX.				A ION. MAG.	
MM/DD/YY	MM/DD/YY	QUANTITY MEASURED	T	1234	ABCD I LMV SC PAGE
1. Gravitational Field Measurements					
1.1.2 Selenodesy (experiments listed in ascending order of earliest date of data in NSSDC data sets)					
Lunar Orbiter 1, Selenodesy, Michael (66-073A-02)	08/10/66	10/28/66			282
Lunar Orbiter 2, Selenodesy, Michael (66-100A-02)	11/06/66	10/11/67			297
Lunar Orbiter 3, Selenodesy, Michael (67-008A-02)	02/05/67	10/09/67			306
Lunar Orbiter 4, Selenodesy, Michael (67-041A-02)	05/04/67	07/11/67			319
Lunar Orbiter 5, Selenodesy, Michael (67-075A-02)	08/01/67	01/31/68			349
2. Electromagnetic Field and Wave Measurements (Frequency Less Than 3000 GHz)					
2.1 Magnetic Field Component (experiments listed in ascending order from lowest frequency sensed)					
Pioneer 1, Single Axis Search Coil Magnetometer, Sonett (58-007A-02)	10/11/58	10/13/58	dc field to 2.5000 Hz (spec)	ABC	I 11
Explorer 6, Search Coil Magnetometer, Sonett (59-004A-04)	08/07/59	10/03/59	dc field to 0.2500 Hz (spec)	ABC	17
Pioneer 5, Search Coil Magnetometer, Coleman (60-001A-02)	03/11/60	07/05/60	dc field to 0.3300 Hz (spec)	I	25
Injun 1, Fluxgate Magnetometer, Van Allen (61-015B-05)	06/30/61	08/31/62	dc field to 0.5000 Hz (spec)	1234	38
Explorer 12, Fluxgate Magnetometer, Cahill (61-020A-02)	08/16/61	12/05/61	dc field to 0.0017 Hz (spec)	BC	43
Mariner 2, Fluxgate Magnetometer, Coleman (62-041A-03)	08/29/62	11/15/62	dc field to 0.0130 Hz (spec)	I	V 61
Explorer 14, Fluxgate Magnetometers, Cahill (62-051A-02)	01/01/63	05/30/63	dc field to 0.0017 Hz (spec)	BC	I 77

SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)	LIMITING DATES OF DATA IN NSSDC DATA SETS		QUANTITY MEASURED		REGIONS SAMPLED OR SOURCES SENSED*				
	MM/DD/YY	MM/DD/YY	MIN.	MAX.	A	ION.	MAG.	T	PAGE
Magnetic Field Component (continued)									
Explorer 18, Fluxgate Magnetometer, Ness (63-046A-02) .....	11/27/63	05/30/64			dc field to	0.0020 Hz	(spec)		
Explorer 21, Fluxgate Magnetometer, Ness (64-060A-02) .....	10/04/64	04/05/65			dc field to	0.0020 Hz	(spec)	CD I	110
Cosmos 49, Proton Precessional Magnetometers, Dolginov (64-069A-01) .....	10/24/64	11/03/64			dc field to	0.0150 Hz	(spec)	CD I	154
Mariner 4, Helium Magnetometer, Smith (64-077A-02) .....	11/28/64	10/01/65			dc field to	0.0100 Hz	(spec)	12	164
1964-083C, Rubidium Vapor Magnetometer, Zmuda (64-083C-01) .....	12/17/64	06/26/65			dc field to	0.0700 Hz	(spec)	I	178
Explorer 28, Fluxgate Magnetometer, Ness (65-042A-02) .....	05/29/65	05/11/67			dc field to	0.0020 Hz	(spec)	12	182
OGO 2, Rubidium Vapor Magnetometer, Cain (65-081A-05) .....	10/14/65	10/02/67			dc field to	1.0000 Hz	(spec)	CD I	197
Pioneer 6, Single Axis Magnetometer, Ness (65-105A-01) .....	01/26/66	07/26/66			dc field to	0.0170 Hz	(spec)	1234	216
Explorer 33, GSFC Magnetometer, Ness (66-058A-01) .....	07/01/66	10/07/68			dc field to	0.1000 Hz	(spec)	I	232
Explorer 33, Ames Magnetic Fields, Sonett (66-058A-03) .....	07/01/66	07/04/68			dc field to	0.0060 Hz	(spec)	CD I	271
Pioneer 7, Single Axis Magnetometer, Ness (66-075A-01) .....	08/17/66	02/23/67			dc field to	0.0150 Hz	(spec)	I	272
Explorer 35, Ames Magnetic Fields, Sonett (67-070A-03) .....	07/19/67	07/16/68			dc field to	0.0060 Hz	(spec)	I	285
OGO 5, UCLA Triaxial Fluxgate Magnetometer, Coleman (68-014A-14) .....	03/05/68	03/03/69			dc field to	0.0080 Hz	(spec)	I L	341
OGO 1, Wide-Band and Narrow-Band Step Frequency VLF Receivers, Helliwell (64-054A-08) .....	09/07/64	12/29/65			200.00 Hz to	100.00 kHz	(spec)	1	376
OGO 2, VLF Receivers -- Wide Band, Narrow Band, Step Frequency, and Tunable, Helliwell (65-081A-02) .....	10/16/65	09/02/66			200.00 Hz to	100.00 kHz	(spec)	1	136
OGO 5, Plasma Wave Detector, Crook (68-014A-24) .....	03/05/68	03/09/70			560.00 Hz to	70.00 kHz	(spec)	1234	214
Injun 3, VLF Receiver Signal Strength, Gurnett (62-067B-09) .....	12/25/62	10/25/63			700.00 Hz to	8.80 kHz	(spec)	1	377
FR-1, VLF Receiver, Storey (65-101A-01) .....	12/07/65	08/01/68			16.00 kHz to	24.00 kHz	(spec)	123	91
Ariel 3, VLF Receiver, Fixed Frequency Signal Strength, Kaiser (67-042A-05) .....	05/05/67	10/11/67			3.20 MHz to	16.00 MHz	(spec)	123	230
Ariel 3, Terrestrial Radio (Thunderstorm) Noise, Murphy (67-042A-04) .....	05/05/67	04/14/68			5.00 MHz to	15.00 MHz	(spec)	1234	325
								T	323

# Phenomenon Measured Index

SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)	LIMITING DATES OF DATA IN NSSDC DATA SETS		QUANTITY MEASURED	REGIONS SAMPLED OR SOURCES SENSED*					
	MIN. MM/DD/YY	MAX. MM/DD/YY		A ION. MAG.					
				T	1234	ABCD	I	LMW SC PAGE	
2.2 Electric Field Component (experiments listed in ascending order from lowest frequency sensed)									
Pioneer 8, Plasma Wave Measurement, Scarf (67-123A-07)	12/13/67	10/07/68	100.00 Hz to 100.00 kHz				I	369	
Pioneer 9, Plasma Wave Detector, Scarf (68-100A-07)	11/08/68	03/06/69	100.00 Hz to 100.00 kHz (spec)				I	384	
Pioneer 8, Plasma Wave Measurement, Scarf (67-123A-07)	12/13/67	10/07/68	372.00 Hz to 428.00 Hz				I	369	
Pioneer 9, Plasma Wave Detector, Scarf (68-100A-07)	11/08/68	03/06/69	372.00 Hz to 428.00 Hz				I	384	
OGO 5, Plasma Wave Detector, Crook (68-014A-24)	03/05/68	03/09/70	560.00 Hz to 700.00 kHz (spec)		1	ABCD	I	377	
OGO 5, Plasma Wave Detector, Crook (68-014A-24)	03/05/68	03/09/70	1.00 kHz to 22.00 kHz (spec)		1	ABCD	I	377	
P-11-AS, VLF Electric Field Detector, Scarf (64-045B-06)	08/15/64	09/13/64	1.70 kHz to 14.50 kHz (spec)		234			129	
Pioneer 8, Plasma Wave Measurement, Scarf (67-123A-07)	12/13/67	10/07/68	20.50 kHz to 23.50 kHz				I	369	
Pioneer 9, Plasma Wave Detector, Scarf (68-100A-07)	11/08/68	03/06/69	28.00 kHz to 32.00 kHz				I	384	
ATS 2, Radio Astronomy, Stone (67-031A-01)	04/07/67	10/23/67	500.00 kHz to 3.00 MHz (spec)					S 308	
OGO 3, Radio Astronomy, Haddock (66-049A-18)	06/09/66	08/16/68	2.00 MHz to 4.00 MHz (spec)					S 259	
3. Photon Measurements (Energy Greater Than .001 ev, Wavelength Less Than 1 mm)									
3.1 Which Sense Terrestrial and Atmospheric Sources Below 80-km Altitude (experiments listed in descending order from longest wavelength protons sensed)									
Explorer 7, Thermal Radiation, Suomi (59-009A-01)	10/19/59	06/04/60	60.00 mic to 3000.00 ang				T	S 20	
Explorer 7, Thermal Radiation, Suomi (59-009A-01)	10/19/59	06/04/60	60.00 mic to 7.00 mic				T	20	
Tiros 3, Low-Resolution Omnidirectional Radiometer, Suomi (61-017A-01)	07/12/61	10/20/61	60.00 mic to 3000.00 ang				T	40	

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					T	1234	ABCD	I	LMV SC PAGE
3.1 Which Sense Terrestrial and Atmospheric Sources Below 80-km Altitude (continued)									
Tiros 3, Low-Resolution Omnidirectional Radiometer, Suomi (61-017A-01) .....	07/12/61	10/20/61	60.00 mic to 7.00 mic	T				40	
Tiros 4, Low-Resolution Omnidirectional Radiometer, Suomi (62-002A-01) .....	02/08/62	06/28/62	60.00 mic to 3000.00 ang	T				49	
Tiros 4, Low-Resolution Omnidirectional Radiometer, Suomi (62-002A-01) .....	02/08/62	06/28/62	60.00 mic to 7.00 mic	T				49	
Tiros 7, Low-Resolution Omnidirectional Radiometer, Suomi (63-024A-01) .....	06/19/63	08/29/63	60.00 mic to 3000.00 ang	T				101	
Tiros 7, Low-Resolution Omnidirectional Radiometer, Suomi (63-024A-01) .....	06/19/63	08/29/63	60.00 mic to 7.00 mic	T				101	
Tiros 2, Scanning Radiometer, Barksdale (60-016A-02) .....	11/23/60	04/13/61	30.00 mic to 7.50 mic	T				30	
Tiros 3, Scanning Radiometer, Rados (61-017A-03) .....	07/12/61	10/01/61	30.00 mic to 7.50 mic	T				41	
Tiros 7, Scanning Radiometer, Rados (63-024A-02) .....	06/19/63	06/19/65	30.00 mic to 7.50 mic	T				102	
Nimbus 2, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (66-040A-04) .....	05/15/66	07/28/66	30.00 mic to 5.00 mic	T				243	
Nimbus 3, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (69-037A-05) .....	04/14/69	02/05/70	23.00 mic to 20.00 mic	T				412	
Nimbus 3, Infrared Interferometer Spectrometer (IRIS), Hanel (69-037A-03) .....	04/15/69	07/22/69	20.00 mic to 5.00 mic (spec)	T				409	
Nimbus 2, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (66-040A-04) .....	05/15/66	07/28/66	16.00 mic to 14.00 mic	T				243	
Tiros 7, Scanning Radiometer, Rados (63-024A-02) .....	06/19/63	06/19/65	15.50 mic to 14.80 mic	T				102	
Nimbus 3, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (69-037A-05) .....	04/14/69	02/05/70	15.50 mic to 14.50 mic	T				412	
Nimbus 3, Satellite Infrared Spectrometer (SIRS) Wark (69-037A-04) .....	04/14/69	06/21/70	15.00 mic to 11.00 mic (spec)	T				411	
Nimbus 4, Temperature-Humidity Infrared Radiometer (THIR), McCulloch (70-025A-02) .....	04/18/70	06/30/70	12.50 mic to 10.50 mic	T				423	
Tiros 2, Scanning Radiometer, Barksdale (60-016A-02) .....	11/23/60	04/13/61	12.00 mic to 8.00 mic	T				30	
Tiros 3, Scanning Radiometer, Rados (61-017A-03) .....	07/12/61	10/01/61	12.00 mic to 8.00 mic	T				41	
Tiros 4, Scanning Radiometer, Barksdale (62-002A-03) .....	02/08/62	06/30/62	12.00 mic to 8.00 mic	T				51	

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3.1 Which Senses Terrestrial and Atmospheric Sources Below 80-km Altitude (continued)											
Tiros 7, Scanning Radiometer, Rados (63-024A-02)	06/19/63	06/19/65	12.00 mic to	8.00 mic	T					102	
Nimbus 2, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (66-040A-04)	05/15/66	07/28/66	11.00 mic to	10.00 mic	T					243	
Nimbus 3, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (69-037A-05)	04/14/69	02/05/70	11.00 mic to	10.00 mic	T					412	
Nimbus 3, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (69-037A-05)	04/14/69	02/05/70	7.00 mic to	6.50 mic	T					412	
Nimbus 4, Temperature-Humidity Infrared Radiometer (THIR), McCulloch (70-025A-02)	04/18/70	06/30/70	7.00 mic to	6.50 mic	T					423	
Nimbus 2, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (66-040A-04)	05/15/66	07/28/66	6.90 mic to	6.40 mic	T					243	
Tiros 2, Scanning Radiometer, Barksdale (60-016A-02)	11/23/60	04/13/61	6.50 mic to	6.00 mic	T					30	
Tiros 3, Scanning Radiometer, Rados (61-017A-03)	07/12/61	10/01/61	6.50 mic to	6.00 mic	T					41	
Tiros 4, Scanning Radiometer, Barksdale (62-002A-03)	02/08/62	06/30/62	6.50 mic to	6.00 mic	T					51	
Tiros 2, Scanning Radiometer, Barksdale (60-016A-02)	11/23/60	04/13/61	6.00 mic to	2000.00 ang	T					30	
Tiros 3, Scanning Radiometer, Rados (61-017A-03)	07/12/61	10/01/61	6.00 mic to	2000.00 ang	T					41	
Tiros 4, Scanning Radiometer, Barksdale (62-002A-03)	02/08/62	06/30/62	6.00 mic to	2000.00 ang	T					51	
Tiros 7, Scanning Radiometer, Rados (63-024A-02)	06/19/63	06/19/65	6.00 mic to	2000.00 ang	T					102	
Nimbus 3, High-Resolution Infrared Radiometer (HRIR), Cherrix (69-037A-02)	04/17/69	01/31/70	4.20 mic to	3.40 mic	T					407	
Nimbus 1, High-Resolution Infrared Radiometer (HRIR), Foshee (64-052A-03)	08/28/64	09/22/64	4.10 mic to	3.50 mic	T					133	
Nimbus 2, High-Resolution Infrared Radiometer (HRIR), Foshee (66-040A-03)	05/15/66	11/15/66	4.10 mic to	3.50 mic	T					241	
Nimbus 2, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (66-040A-04)	05/15/66	07/28/66	4.00 mic to	2000.00 ang	T					243	
Nimbus 3, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (69-037A-05)	04/14/69	02/05/70	4.00 mic to	2000.00 ang	T					412	
Nimbus 3, High-Resolution Infrared Radiometer (HRIR), Cherrix (69-037A-02)	04/17/69	01/31/70	1.30 mic to	7000.00 ang	T					407	

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	MM/DD/YY	MM/DD/YY							
3.1 Which Sense Terrestrial and Atmospheric Sources Below 80-km Altitude (continued)									
Gemini 5, Cloudtop Spectrometer, Satedy (65-068A-04) .....	08/21/65	08/29/65	7800.00 ang to 7500.00 ang (spec)	T					210
Tiros 2, Scanning Radiometer, Barksdale (60-016A-02) .....	11/23/60	04/13/61	7500.00 ang to 5500.00 ang	T					30
Tiros 3, Scanning Radiometer, Rados (61-017A-03) .....	07/12/61	10/01/61	7500.00 ang to 5500.00 ang	T					41
Tiros 4, Scanning Radiometer, Barksdale (62-002A-03) .....	02/08/62	06/30/62	7500.00 ang to 5500.00 ang	T					51
Tiros 7, Scanning Radiometer, Rados (63-024A-02) .....	06/19/63	06/19/65	7500.00 ang to 5500.00 ang	T					102
OGO 4, Lyman-Alpha and UV Airglow Study, Mange (67-073A-13) .....	07/29/67	02/12/68	1550.00 ang to 1050.00 ang (spec)	T					344
3.2 Which Sense Sources in the Ionosphere, 80- to 3000-km Altitude (Airglow, Aurora, etc.) (experiments listed in descending order from longest wavelength photons sensed)									
Injun 3, Auroral and Airglow Photometers, O'Brien (62-067B-08) .....	12/14/62	10/28/63	5577.00 ang to 3914.00 ang			123			90
3.4 Which Sense Sources in Interplanetary Space (Zodiacal Light, etc.) (experiments listed in descending order from longest wave- length photons sensed)									
Gemini 5, Zodiacal Light Photography, Ney (65-068A-01) .....	08/21/65	08/29/65	8000.00 ang to 3000.00 ang		I				209
Gemini 9, Zodiacal Light Photography, Ney (66-047A-01) .....	06/03/66	06/06/66	8000.00 ang to 3000.00 ang		I				251
Gemini 10, Zodiacal Light Photography, Ney (66-066A-01) .....	07/18/66	07/21/66	8000.00 ang to 3000.00 ang		I				277

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3.5 Which Sense Lunar or Planetary Sources (experiments listed in descending order from longest wavelength photons sensed)								
Mariner 6, Two-Channel IR Radiometer Mars Surface Temperature, Neugebauer, G. (69-014A-03) .....	07/31/69	07/31/69	25.00 mic to 18.00 mic				M	397
Mariner 7, Two-Channel IR Radiometer Mars Surface Temperature, Neugebauer, G. (69-030A-03) .....	08/05/69	08/05/69	25.00 mic to 18.00 mic				M	405
Mariner 6, IR Spectrometer, Pimentel (69-014A-02) .....	07/31/69	07/31/69	14.30 mic to 1.90 mic	(spec)			M	396
Mariner 7, IR Spectrometer, Pimentel (69-030A-02) .....	08/05/69	08/05/69	14.30 mic to 1.90 mic	(spec)			M	404
Mariner 6, Two-Channel IR Radiometer Mars Surface Temperature, Neugebauer, G. (69-014A-03) .....	07/31/69	07/31/69	12.00 mic to 8.00 mic				M	397
Mariner 7, Two-Channel IR Radiometer Mars Surface Temperature, Neugebauer, G. (69-030A-03) .....	08/05/69	08/05/69	12.00 mic to 8.00 mic				M	405
Mariner 2, Infrared Radiometer, Neugebauer, M. (62-041A-02) .....	12/14/62	12/14/62	10.40 mic to 8.40 mic	(spec)			V	60
3.6 Which Sense Solar or Stellar Sources (experiments listed in descending order from longest wavelength photons sensed)								
Explorer 7, Thermal Radiation, Suomi (59-009A-01) .....	10/19/59	06/04/60	60.00 mic to 3000.00 ang				T	S 20
OSO 4, Solar EUV Spectrometer, Goldberg, L. (67-100A-07) .....	10/25/67	11/29/67	1400.00 ang to 300.00 ang	(spec)			S	S 356
Solrad 1, X-Ray and Lyman-Alpha Study, Friedman (60-007B-01) .....	06/22/60	11/01/60	1350.00 ang to 1050.00 ang				S	S 28
Explorer 30, Solar X-Ray and Ultraviolet Monitor Kreplin (65-093A-01) .....	11/27/65	08/24/67	1350.00 ang to 1225.00 ang				S	S 223
Explorer 30, Solar X-Ray and Ultraviolet Monitor Kreplin (65-093A-01) .....	11/27/65	08/24/67	1350.00 ang to 1080.00 ang				S	S 223
OSO 1, Solar Spectrometer, Neupert (62-006A-01) ..	03/07/62	05/15/62	400.00 ang to 10.00 ang	(spec)			S	S 53
Solrad 7A, Solar X-Ray (2 to 60 A) and UV (1225 to 1350 A) Flux, Kreplin (64-001D-01) .....	01/11/64	02/03/65	60.00 ang to 44.00 ang				S	S 121
OSO 2, Solar X-Ray Bursts, Chubb (65-007A-02) ....	02/04/65	03/08/65	60.00 ang to 44.00 ang				S	S 187
Explorer 30, Solar X-Ray and Ultraviolet Monitor Kreplin (65-093A-01) .....	11/27/65	08/24/67	60.00 ang to 44.00 ang				S	S 223

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3.6 Which Sense Solar or Stellar Sources (continued)															
Solrad 7A, Solar X-Ray (2 to 60 A) and UV (1225 to 1350 A) Flux, Kreplin (64-001D-01) .....	01/11/64	02/03/65	55.00 ang to	44.00 ang	S										121
OSO 2, Solar X-Ray Bursts, Chubb (65-007A-02) ....	02/04/65	03/08/65	20.00 ang to	8.00 ang	S										187
Explorer 30, Solar X-Ray and Ultraviolet Monitor Kreplin (65-093A-01) .....	11/27/65	08/24/67	20.00 ang to	1.00 ang	S										223
Solrad 7A, Solar X-Ray (2 to 60 A) and UV (1225 to 1350 A) Flux, Kreplin (64-001D-01) .....	01/11/64	02/03/65	16.00 ang to	8.00 ang	S										121
Explorer 30, Solar X-Ray and Ultraviolet Monitor Kreplin (65-093A-01) .....	11/27/65	08/24/67	16.00 ang to	8.00 ang	S										223
Solrad 7A, Solar X-Ray (2 to 60 A) and UV (1225 to 1350 A) Flux, Kreplin (64-001D-01) .....	01/11/64	02/03/65	14.00 ang to	8.00 ang	S										121
ERS 17, X-Ray Detectors, Vette (65-058C-02) .....	07/20/65	11/03/65	14.00 ang to	1.00 ang	S										205
Injun 1, GM Counter, Frank (61-015B-01) .....	06/29/61	08/31/62	12.00 ang to	2.00 ang	S										35
Injun 3, Geiger Tube Detectors, O'Brien (62-067B-01) .....	12/14/62	10/28/63	12.00 ang to	2.00 ang	S										82
Explorer 33, Electron and Proton Detectors, Van Allen (66-058A-05) .....	07/01/66	12/31/68	12.00 ang to	2.00 ang	S										274
Explorer 35, Electron and Proton Detectors, Van Allen (67-070A-01) .....	07/19/67	05/28/70	12.00 ang to	2.00 ang	S										338
Solrad 1, X-Ray and Lyman-Alpha Study, Friedman (60-007B-01) .....	06/22/60	11/01/60	8.00 ang to	2.00 ang	S										28
Solrad 7A, Solar X-Ray (2 to 60 A) and UV (1225 to 1350 A) Flux, Kreplin (64-001D-01) .....	01/11/64	02/03/65	8.00 ang to	2.00 ang	S										121
OSO 2, Solar X-Ray Bursts, Chubb (65-007A-02) ....	02/04/65	03/08/65	8.00 ang to	2.00 ang	S										187
Explorer 30, Solar X-Ray and Ultraviolet Monitor Kreplin (65-093A-01) .....	11/27/65	08/24/67	8.00 ang to	1.00 ang	S										223
Explorer 30, Solar X-Ray and Ultraviolet Monitor Kreplin (65-093A-01) .....	11/27/65	08/24/67	3.00 ang to	24.79 kev	S										223
OGO 1, Ionization Chamber, Winckler (64-054A-20) .....	09/05/64	12/06/67	1.24 ang to	50.00 kev	S										144
OGO 3, Ionization Chamber, Winckler (66-049A-23) .....	06/08/66	08/12/68	1.24 ang to	50.00 kev	S										265
ERS 17, Gamma-Ray Detector, Vette (65-058C-03) ...	07/20/65	11/03/65	30.00 kev to	10.00 Mev (spec)	SC										206
OSO 1, Gamma-Ray Scintillation Detector, Peterson (62-006A-08) .....	03/07/62	05/15/62	50.00 kev to	3.00 Mev	SC										53



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4. Charged Particle Measurements								
4.1 Which Sense Electrons (experiments listed in ascending order from lowest energy particle sensed)								
Ariel 1, Radio Frequency Capacitance Probe, Sayers (62-015A-01) .....	04/27/62	07/08/62	R, DENS Thermal Elec.	12				56
Alouette 1, Sweep Frequency Topside Ionosonde, Nelms (62-049A-01) .....	09/29/62	11/18/69	R, DENS Thermal Elec.	1234				67
Tiros 7, Langmuir Probe, Brace (63-024A-03) .....	06/19/63	07/09/63	R, DENS Thermal Elec.	12				104
Explorer 20, Fixed Frequency Ionosonde, Knecht (64-051A-01) .....	08/25/64	12/29/65	R, DENS Thermal Elec.	1234				131
Explorer 22, Langmuir Probe, Brace (64-064A-02) ..	10/10/64	05/31/65	R, DENS Thermal Elec.	1234				162
Alouette 2, Sweep Frequency Ionosonde, Nelms (65-098A-01) .....	11/29/65	09/10/69	R, DENS Thermal Elec.	1234				226
Pioneer 6, Two-Frequency Beacon Receiver, Eshleman (65-105A-04) .....	12/16/65	07/11/66	R, N/UAC Thermal Elec.	1			I	236
Pioneer 6, Superior Conjunction Faraday Rotation Levy (65-105A-08) .....	08/26/68	12/08/68	R, N/UAC Thermal Elec.				I	240
Pioneer 7, Two-Frequency Beacon Receiver, Eshleman (66-075A-04) .....	08/15/66	11/29/67	R, N/UAC Thermal Elec.	1			I	289
Pioneer 7, Superior Conjunction Faraday Rotation Levy (66-075A-08) .....	11/26/68	12/02/68	R, N/UAC Thermal Elec.				I	292
ATS 1, Faraday Rotation, Darosa (66-110A-15) .....	01/01/67	12/31/69	R, N/UAC Thermal Elec.					301
Ariel 3, Langmuir Probe, Sayers (67-042A-01) .....	05/05/67	04/14/68	R, MWQ Thermal Elec.	(spec)	1234			321
Ariel 3, Radio Frequency Capacitance Probe, Sayers (67-042A-06) .....	05/05/67	04/14/68	R, DENS Thermal Elec.	1234				326
Mariner 5, Two-Frequency Beacon Receiver, Eshleman (67-060A-02) .....	06/14/67	11/21/67	R, N/UAC Thermal Elec.	1			I	335
Pioneer 8, Two-Frequency Beacon Receiver, Eshleman (67-123A-03) .....	12/14/67	08/30/70	R, N/UAC Thermal Elec.	1			I	365
Pioneer 9, Two-Frequency Beacon Receiver, Eshleman (68-100A-03) .....	11/09/68	08/27/70	R, N/UAC Thermal Elec.	1			I	381
ISIS 1, Sweep Frequency Ionosonde, Nelms (69-009A-01) .....	01/30/69	03/23/70	R, DENS Thermal Elec.	1234				388
ISIS 1, Fixed Frequency Ionosonde, Calvert (69-009A-02) .....	01/30/69	03/23/70	R, DENS Thermal Elec.	1234				390
Explorer 17, Langmuir Probes, Brace (63-009A-02) ..	04/03/63	07/10/63	R, TEMP. 0.00 ev to 1.50 ev (spec)	12				98

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4.1 Which Sense Electrons (continued)								
Explorer 18, Retarding Potential Analyzer, Serbu (63-046A-01) .....	11/27/63	11/27/63	R, FLUX 0.00 ev to 100.00 ev (spec)	1	AB			109
Explorer 21, Retarding Potential Analyzer, Serbu (64-060A-01) .....	10/05/64	04/04/65	R, FLUX 0.00 ev to 50.00 ev (spec)	1	AB			153
Explorer 28, Retarding Potential Analyzer, Serbu (65-042A-01) .....	05/29/65	05/05/67	R, FLUX 0.00 ev to 50.00 ev (spec)	1	AB			196
Pioneer 6, Plasma Probe (Ames Research Center), Wolfe (65-105A-06) .....	12/16/65	10/27/68	R, FLUX 0.00 vq to 500.00 vq (spec)				I	239
Pioneer 7, Plasma Probe (Ames Research Center), Wolfe (66-075A-03) .....	08/17/66	11/19/68	R, FLUX 0.00 vq to 500.00 vq (spec)				I	287
Pioneer 8, Plasma Probe (Ames Research Center), Wolfe (67-123A-02) .....	12/14/67	01/26/68	R, FLUX 0.00 vq to 1.00 kvq (spec)				I	364
Pioneer 9, Plasma Probe (Ames Research Center), Wolfe (68-100A-02) .....	11/08/68	03/29/69	R, FLUX 0.00 vq to 1.00 kvq (spec)				I	380
Explorer 34, Low-Energy Proton and Electron Differential Energy Analyzer (LEPEDEA), Van Allen (67-051A-04) .....	06/30/67	07/04/67	R, FLUX 33.00 ev to 57.00 kev (spec)			BCD	I	332
OGO 3, Low-Energy Electrons and Protons, Frank (66-049A-08) .....	07/14/66	07/16/66	R, FLUX 50.00 ev to 49.00 kev (spec)			ABC	I	256
Explorer 18, Faraday Cup, Bridge (63-046A-07) ....	11/27/63	01/13/65	R, FLUX 65.00 ev to 210.00 ev	1	ABCD	I		119
Pioneer 6, Solar Wind Plasma Faraday Cup, Bridge (65-105A-02) .....	12/18/65	04/03/69	R, FLUX 90.00 ev to 1.85 kev (spec)				I	233
Explorer 25, Cadmium Sulfide Detectors, Van Allen (64-076B-05) .....	02/13/65	07/19/66	U, FLUX 100.00 ev to infinity	1234				173
Pioneer 7, Solar Wind Plasma Faraday Cup, Bridge (66-075A-02) .....	08/18/66	12/02/68	R, FLUX 115.00 ev to 1.60 kev (spec)				I	286
Explorer 21, Faraday Cup, Bridge (64-060A-07) ....	10/11/64	09/24/65	R, FLUX 130.00 ev to 265.00 ev	1	ABC	I		161
Injun 1, Cadmium Sulfide Detector, Freeman (61-015B-02) .....	06/30/61	08/31/62	U, IONI 200.00 ev to 500.00 kev	1234				36
Explorer 12, Charged Particles, Van Allen (61-020A-03) .....	08/16/61	12/06/61	U, IONI 200.00 ev to 500.00 kev			BC	I	45
Telstar 2, Proton and Electron Radiation, Brown (63-013A-01) .....	05/07/63	05/07/65	R, IONI 750.00 ev to infinity (spec)	12	A			100
Injun 3, DC Scintillator, O'Brien (62-067B-05) ...	12/14/62	10/31/63	U, FLUX 5.00 kev to infinity	1234				87
Explorer 25, Plastic Scintillator Particle Detectors, Van Allen (64-076B-06) .....	02/13/65	07/19/66	R, FLUX 5.00 kev to infinity	1234				174
Injun 3, Electron Multiplier, O'Brien (62-067B-06) .....	12/14/62	10/25/63	R, FLUX 10.00 kev to infinity	1234				88

# Phenomenon Measured Index

SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)	LIMITING DATES OF DATA IN NSSDC		QUANTITY MEASURED		REGIONS SAMPLED OR SOURCES SENSED*									
	DATA SETS		MM/DD/YY	MM/DD/YY	A	ION. MAG.	T	1234	ABCD	I	LMV	SC	PAGE	
	MIN.	MAX.												
4.1 Which Sense Electrons (continued)														
OGO 1, Trapped Radiation Scintillation Counter, Konradi (64-054A-16) .....	09/07/64	11/16/65	R, IONI	10.00 kev to 100.00 kev (spec)						BCD	I		140	
OGO 3, Solar Cosmic Rays, Anderson (66-049A-01) ..	06/24/66	02/27/67	R, FLUX	10.00 kev to 100.00 kev						ABC	I		253	
OGO 3, Trapped Radiation Scintillation Counter, Konradi (66-049A-10) .....	06/09/66	01/26/67	R, FLUX	10.00 kev to 100.00 kev (spec)						BC	I		257	
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....	07/26/58	09/21/58	U, FLUX	20.00 kev to infinity					12				7	
Explorer 7, Radiation and Solar Proton, Van Allen (59-009A-04) .....	10/13/59	02/28/61	U, FLUX	30.00 kev to infinity						A			22	
Injun 1, GM Counter, Frank (61-015B-01) .....	06/29/61	08/31/62	U, FLUX	40.00 kev to infinity					1234				35	
Injun 1, Electron Differential Energy Spectrometer, Laughlin (61-015B-03) .....	06/30/61	08/31/62	R, FLUX	40.00 kev to 50.00 kev					1234				37	
Explorer 12, Charged Particles, Van Allen (61-020A-03) .....	08/16/61	12/06/61	R, FLUX	40.00 kev to 100.00 kev						BC	I		45	
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	U, FLUX	40.00 kev to infinity					4	A			75	
Explorer 14, Trapped Particle Radiation, Van Allen (62-051A-03) .....	10/02/62	08/11/63	R, FLUX	40.00 kev to 230.00 kev						BC	I		78	
Injun 3, Geiger Tube Detectors, O'Brien (62-067B-01) .....	12/14/62	10/28/63	U, FLUX	40.00 kev to infinity					1234				82	
Injun 3, Magnetic Differential Electron Spectrometer, O'Brien (62-067B-03) .....	12/14/62	10/28/63	R, FLUX	40.00 kev to 60.00 kev					1234				85	
Explorer 21, Ion Chamber and GM Counters, Anderson (64-060A-05) .....	10/04/64	09/23/65	U, FLUX	40.00 kev to infinity						BCD	I		158	
Explorer 25, Geiger-Mueller Counter, Van Allen (64-076B-03) .....	02/13/65	07/19/66	U, FLUX	40.00 kev to infinity					1234				171	
Explorer 28, Ion Chamber and GM Counters, Anderson (65-042A-05) .....	05/29/65	01/03/67	U, FLUX	40.00 kev to infinity						BCD	I		202	
ERS 17, X-Ray Detectors, Vette (65-058C-02) .....	07/20/65	11/03/65	U, FLUX	40.00 kev to infinity					1	ABCD	I		205	
Explorer 34, Low-Energy Proton and Electron Differential Energy Analyzer (LEPEDEA), Van Allen (67-051A-04) .....	06/30/67	07/04/67	U, FLUX	40.00 kev to infinity						BCD	I		332	
Explorer 18, Ion Chamber and GM Counters, Anderson (63-046A-05) .....	11/27/63	03/26/65	R, FLUX	45.00 kev to infinity						BCD	I		115	
OGO 1, Electron Spectrometer, Winckler (64-054A-21) .....	09/00/64	06/05/67	R, FLUX	50.00 kev to 4.00 Mev (spec)						ABC	I		148	
OGO 3, Electron Spectrometer, Winckler (66-049A-22) .....	06/00/66	05/03/68	R, FLUX	50.00 kev to 4.00 Mev (spec)						ABC	I		260	

SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)	LIMITING DATES OF DATA IN NSSDC		QUANTITY MEASURED		REGIONS SAMPLED OR SOURCES SENSED*				
	DATA SETS								
	MIN. MM/DD/YY	MAX. MM/DD/YY							
4.1 Which Sense Electrons (continued)					A ION. MAG.	T	1234	ABCD	I LMV SC PAGE
Explorer 33, Electron and Proton Detectors, Van Allen (66-058A-05) .....	07/01/66	12/31/68	U, FLUX	50.00 kev to infinity	CD	I			274
Explorer 35, Electron and Proton Detectors, Van Allen (67-070A-01) .....	07/19/67	05/28/70	U, FLUX	50.00 kev to infinity	I	L			338
OSO 1, Proton Electron Analyzer, Schrader (62-006A-11) .....	03/07/62	07/14/63	R, FLUX	60.00 kev to infinity	1				54
Injun 3, Magnetic Differential Electron Spectrometer, O'Brien (62-067B-03) .....	12/14/62	10/28/63	R, FLUX	80.00 kev to 110.00 kev	1234				85
Injun 1, Electron Differential Energy Spec- trometer, Laughlin (61-015B-03) .....	06/30/61	08/31/62	R, FLUX	90.00 kev to 100.00 kev	1234				37
ERS 17, Charged Particle Detectors, Vette (65-058C-01) .....	07/20/65	11/03/65	R, FLUX	100.00 kev to infinity	1	ABCD	I		204
Explorer 12, Cosmic Ray, McDonald (61-020A-04) ...	08/16/61	12/06/61	U, FLUX	150.00 kev to infinity		BCD	I		47
Explorer 14, Cosmic Ray, McDonald (62-051A-04) ...	10/02/62	08/11/63	U, FLUX	150.00 kev to infinity		BCD	I		79
Telstar 1, Proton and Electron Radiation, Brown (62-029A-01) .....	07/10/62	02/21/63	U, IONI	180.00 kev to 990.00 kev (spec)	1	A			59
Explorer 6, Scintillation Counter, Sonett (59-004A-02) .....	08/07/59	10/03/59	U, FLUX	200.00 kev to infinity		ABC			13
Relay 1, Solid-State Ion Chamber Electron and Proton Detector, Brown (62-068A-02) .....	12/13/62	03/31/64	U, IONI	200.00 kev to 1.00 Mev (spec)	12	A			92
Explorer 14, Trapped Particle Radiation, Van Allen (62-051A-03) .....	10/02/62	08/11/63	R, FLUX	230.00 kev to infinity		BC	I		78
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	U, FLUX	250.00 kev to infinity	4	A			75
Injun 3, Geiger Tube Detectors, O'Brien (62-067B-01) .....	12/14/62	10/28/63	U, FLUX	250.00 kev to infinity	1234				82
1963-038C, Energetic Electron and Proton Detectors, Bostrom (63-038C-01) .....	09/28/63	12/31/68	R, FLUX	280.00 kev to infinity (spec)	1234				105
Relay 1, Proton-Electron Detectors, McIlwain (62-068A-03) .....	12/13/62	10/20/64	R, FLUX	300.00 kev to 820.00 kev (spec)		AB			93
Explorer 26, Solid-State Electron Detector, Brown (64-086A-01) .....	12/21/64	05/15/67	U, IONI	300.00 kev to 3.50 Mev (spec)	1	AB			183
ATS 1, Omnidirectional Spectrometer, Paulikas (66-110A-03) .....	12/17/66	12/05/68	R, FLUX	300.00 kev to 1.90 Mev (spec)		C			299
Explorer 34, Low-Energy Solid-State Telescope, Brown (67-051A-01) .....	05/24/67	05/03/69	R, IONI	300.00 kev to 72.00 Mev (spec)	2	ABCD	I		329
ERS 17, Charged Particle Detectors, Vette (65-058C-01) .....	07/20/65	11/03/65	R, FLUX	320.00 kev to infinity	1	ABCD	I		204

SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)	LIMITING DATES OF DATA IN NSSDC DATA SETS		QUANTITY MEASURED	REGIONS SAMPLED OR SOURCES SENSED*				
	MIN. MM/DD/YY	MAX. MM/DD/YY		A ION. MAG.				
				T	1234	ABCD	I	LMV SC PAGE
4.1 Which Sense Electrons (continued)								
Pioneer 8, Cosmic-Ray Gradient Detector, Webber (67-123A-06) .....	12/13/67	04/10/68	R, FLUX 340.00 kev to 8.40 Mev (spec)				I	368
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....	04/28/61	11/12/61	U, FLUX 350.00 kev to infinity				A	33
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....	04/28/61	11/12/61	U, FLUX 400.00 kev to infinity				A	33
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....	04/28/61	11/12/61	U, FLUX 400.00 kev to infinity				A	33
OGO 2, Low-Energy Proton, Alpha Particle Measurement, Simpson (65-081A-07) .....	10/15/65	12/13/66	U, FLUX 400.00 kev to infinity				4 A	218
ATS 1, Particle Telescope, Brown (66-110A-05) ....	12/09/66	03/01/67	R, IONI 400.00 kev to 3.00 Mev (spec)				C	300
Explorer 26, Omnidirectional and Unidirectional Electron and Proton Fluxes, McIlwain (64-086A-02) .....	12/21/64	05/25/67	R, FLUX 500.00 kev to infinity				AB	185
OVI-2, Electron and Proton Detectors, Farley (65-078A-02) .....	10/00/65	12/01/65	R, FLUX 560.00 kev to 5.00 Mev (spec)				AB	211
OGO 1, Ionization Chamber, Winckler (64-054A-20) .....	09/05/64	12/06/67	U, IONI 600.00 kev to infinity				ABC I	144
OGO 3, Ionization Chamber, Winckler (66-049A-23) .....	06/08/66	08/12/68	U, IONI 600.00 kev to infinity				ABC I	265
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....	07/26/58	09/21/58	U, FLUX 700.00 kev to infinity				12	7
ERS 13, Charged Particle Detectors, Vette (64-040C-01) .....	07/17/64	12/08/64	R, FLUX 700.00 kev to infinity				1 ABC I	125
OGO 2, Low-Energy Proton, Alpha Particle Measurement, Simpson (65-081A-07) .....	10/15/65	12/13/66	U, FLUX 700.00 kev to infinity				4 A	218
Explorer 33, Ion Chamber and GM Counters, Anderson (66-058A-04) .....	07/01/66	06/09/67	U, IONI 700.00 kev to infinity				C I	273
Pioneer 1, Ion Chamber, Sonett (58-007A-01) .....	10/11/58	10/13/58	U, IONI 1.00 Mev to infinity				AB	9
Explorer 18, Ion Chamber and GM Counters, Anderson (63-046A-05) .....	11/27/63	03/26/65	U, IONI 1.00 Mev to infinity				BC I	115
Explorer 21, Ion Chamber and GM Counters, Anderson (64-060A-05) .....	10/04/64	09/23/65	U, IONI 1.00 Mev to infinity				BC I	158
Explorer 28, Ion Chamber and GM Counters, Anderson (65-042A-05) .....	05/29/65	01/03/67	U, IONI 1.00 Mev to infinity				BC I	202
Explorer 6, Ion Chamber and GM Counter, Winckler (59-004A-03) .....	08/07/59	10/06/59	U, IONI 1.50 Mev to infinity				ABC	15
Injun 3, Integral Magnetic Electron Spectrometer, O'Brien (62-067B-04) .....	12/14/62	10/25/63	R, FLUX 1.50 Mev to infinity				1234	86

SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)	LIMITING DATES OF DATA IN NSSDC DATA SETS		QUANTITY MEASURED	REGIONS SAMPLED OR SOURCES SENSED*				
	MIN. MM/DD/YY	MAX. MM/DD/YY		A ION. MAG.				
				T	1234	ABCD	I	LMV SC PAGE
4.1 Which Sense Electrons (continued)								
Pioneer 5, Ion Chamber and GM Tube, Winckler (60-001A-03) .....	03/11/60	05/17/60	U, IONI	1.60 Mev to infinity	ABC	I	S	26
Explorer 12, Charged Particles, Van Allen (61-020A-03) .....	08/16/61	12/06/61	U, FLUX	1.60 Mev to infinity	BC	I		45
Explorer 33, Ion Chamber and GM Counters, Anderson (66-058A-04) .....	07/01/66	06/09/67	U, FLUX	2.50 Mev to infinity	C	I		273
Explorer 33, Ion Chamber and GM Counters, Anderson (66-058A-04) .....	07/01/66	06/09/67	U, FLUX	2.50 Mev to infinity	C	I		273
Explorer 18, Cosmic Rays, McDonald (63-046A-04) ..	11/27/63	05/26/64	R, FLUX	2.70 Mev to 21.00 Mev (spec)	BCD	I		114
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	U, FLUX	2.80 Mev to infinity	4	A		75
Explorer 6, Ion Chamber and GM Counter, Winckler (59-004A-03) .....	08/07/59	10/06/59	U, FLUX	2.90 Mev to infinity	ABC			15
Pioneer 5, Ion Chamber and GM Tube, Winckler (60-001A-03) .....	03/11/60	05/17/60	U, FLUX	2.90 Mev to infinity	ABC	I	S	26
Explorer 1, Cosmic-Ray Detector, Van Allen (58-001A-01) .....	02/01/58	03/15/58	U, FLUX	3.00 Mev to infinity	12			3
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....	07/26/58	09/21/58	U, FLUX	3.00 Mev to infinity	12			7
ERS 17, Charged Particle Detectors, Vette (65-058C-01) .....	07/20/65	11/03/65	R, FLUX	3.20 Mev to 7.00 Mev	1	ABCD	I	204
ERS 13, Charged Particle Detectors, Vette (64-040C-01) .....	07/17/64	12/08/64	R, FLUX	3.50 Mev to infinity	1	ABC	I	125
Relay 1, Proton-Electron Detectors, McIlwain (62-068A-03) .....	12/13/62	10/20/64	U, FLUX	3.70 Mev to infinity	AB			93
Explorer 18, Cosmic Rays, McDonald (63-046A-04) ..	11/27/63	05/26/64	U, FLUX	4.00 Mev to infinity	BCD	I		114
Explorer 26, Omnidirectional and Unidirectional Electron and Proton Fluxes, McIlwain (64-086A-02) .....	12/21/64	05/25/67	R, FLUX	4.00 Mev to infinity	AB			185
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....	07/26/58	09/21/58	U, FLUX	5.00 Mev to infinity	12			7
Explorer 18, Ion Chamber and GM Counters, Anderson (63-046A-05) .....	11/27/63	03/26/65	U, FLUX	6.00 Mev to infinity	BC	I		115
Explorer 6, Proportional Counter Telescope, Simpson (59-004A-01) .....	08/07/59	10/06/59	U, FLUX	13.00 Mev to infinity	ABC			12
Pioneer 5, Proportional Counter Telescope, Simpson (60-001A-01) .....	03/11/60	05/16/60	U, FLUX	13.00 Mev to infinity	ABC	I	S	24
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....	04/28/61	11/12/61	U, FLUX	15.00 Mev to infinity	A			33
Ariel 1, Cosmic-Ray Detector, Elliot (62-015A-03) ..	04/27/62	07/12/62	R, FLUX	2.50 Gev to 16.00 Gev	A			57

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SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)	LIMITING DATES OF DATA IN NSSDC DATA SETS		QUANTITY MEASURED		REGIONS SAMPLED OR SOURCES SENSED*				
	MM/DD/YY	MM/DD/YY	MIN.	MAX.					
	MM/DD/YY	MM/DD/YY							
4.2 Which Sense Protons or Hydrogen Ions (experiments listed in ascending order from lowest energy particle sensed)									
Explorer 10, Plasma Probe, Bridge (61-010A-02) ...	03/25/61	03/27/61	R, FLUX	0.00	ev to 2.30 kev (spec)	I			32
Explorer 18, Retarding Potential Analyzer, Serbu (63-046A-01) .....	11/27/63	11/27/63	R, FLUX	0.00	ev to 100.00 ev (spec)	1	AB		109
Explorer 21, Retarding Potential Analyzer, Serbu (64-060A-01) .....	10/05/64	04/04/65	R, FLUX	0.00	ev to 50.00 ev (spec)	1	AB		153
Explorer 28, Retarding Potential Analyzer, Serbu (65-042A-01) .....	05/29/65	05/05/67	R, FLUX	0.00	ev to 50.00 ev (spec)	1	AB		196
Explorer 34, Low-Energy Proton and Electron Differential Energy Analyzer (LEPEDEA), Van Allen (67-051A-04) .....	06/30/67	07/04/67	R, FLUX	25.00	ev to 47.00 kev (spec)	BCD	I		332
Explorer 18, Solar Wind Protons, Wolfe (63-046A-06) .....	11/27/63	04/03/64	R, FLUX	25.00	vq to 16.00 kvq (spec)	ABC	I		118
Explorer 21, Faraday Cup, Bridge (64-060A-07) ...	10/11/64	09/24/65	R, FLUX	40.00	ev to 5.40 kev (spec)	1	ABC	I	161
Explorer 18, Faraday Cup, Bridge (63-046A-07) ...	11/27/63	01/13/65	R, FLUX	45.00	ev to 5.40 kev (spec)	1	ABCD	I	119
OGO 3, Low-Energy Electrons and Protons, Frank (66-049A-08) .....	07/14/66	07/16/66	R, FLUX	50.00	ev to 49.00 kev (spec)	ABC	I		256
Pioneer 6, Solar Wind Plasma Faraday Cup, Bridge (65-105A-02) .....	12/18/65	04/03/69	R, FLUX	75.00	ev to 9.48 kev (spec)	I			233
Pioneer 7, Solar Wind Plasma Faraday Cup, Bridge (66-075A-02) .....	08/18/66	12/02/68	R, FLUX	75.00	ev to 9.48 kev (spec)	I			286
Explorer 25, Cadmium Sulfide Detectors, Van Allen (64-076B-05) .....	02/13/65	07/19/66	U, FLUX	100.00	ev to infinity	1234			173
Pioneer 8, Plasma Probe (Ames Research Center), Wolfe (67-123A-02) .....	12/14/67	01/26/68	R, FLUX	150.00	vq to 15.00 kvq (spec)	I			364
Pioneer 9, Plasma Probe (Ames Research Center), Wolfe (68-100A-02) .....	11/08/68	03/29/69	R, FLUX	150.00	vq to 15.00 kvq (spec)	I			380
Pioneer 6, Plasma Probe (Ames Research Center), Wolfe (65-105A-06) .....	12/16/65	10/27/68	R, FLUX	200.00	vq to 10.00 kvq (spec)	I			239
Pioneer 7, Plasma Probe (Ames Research Center), Wolfe (66-075A-03) .....	08/17/66	11/19/68	R, FLUX	200.00	vq to 10.00 kvq (spec)	I			287
Mariner 2, Solar Plasma Analyzer, Neugebauer, M. (62-041A-06) .....	08/29/62	12/30/62	R, FLUX	231.00	ev to 882.40 kev (spec)	I	V		62
Explorer 34, Electrostatic Analyzer, Ogilvie (67-051A-08) .....	05/27/67	01/30/68	R, FLUX	310.00	vq to 5.10 kvq (spec)	I			333
Explorer 21, Solar Wind Protons, Wolfe (64-060A-06) .....	10/05/64	12/23/64	R, FLUX	700.00	vq to 8.00 kvq (spec)	ABC			160
Injun 1, Cadmium Sulfide Detector, Freeman (61-015B-02) .....	06/30/61	08/31/62	U, IONI	1.00	kev to 10.00 Mev	1234			36

LIMITING DATES OF  
DATA IN NSSDC  
DATA SETS

MIN. MAX.  
MM/DD/YY MM/DD/YY

SPACECRAFT, EXPERIMENT, INVESTIGATOR (NSSDC ID)

REGIONS SAMPLED OR  
SOURCES SENSED\*

A ION. MAG.

T 1234 ABCD I LMV SC PAGE

QUANTITY MEASURED

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#### 4.2 Which Sense Protons or Hydrogen Ions (continued)

Injun 1, Cadmium Sulfide Detector, Freeman (61-015B-02) .....	06/30/61	08/31/62	R, IONI	1.00 kev to 10.00 Mev	1234				36
Explorer 12, Charged Particles, Van Allen (61-020A-03) .....	08/16/61	12/06/61	U, IONI	1.00 kev to 10.00 Mev		BC	I		45
Injun 3, Geiger Tube Detectors, O'Brien (62-067B-01) .....	12/14/62	10/28/63	U, FLUX	5.00 kev to infinity	1234				82
Injun 3, DC Scintillator, O'Brien (62-067B-05) .....	12/14/62	10/31/63	U, FLUX	50.00 kev to infinity	1234				87
OGO 3, Trapped Radiation Scintillation Counter, Konradi (66-049A-10) .....	06/09/66	01/26/67	R, FLUX	100.00 kev to 1.00 Mev (spec)		BC	I		257
Explorer 33, Electron and Proton Detectors, Van Allen (66-058A-05) .....	07/01/66	12/31/68	R, FLUX	310.00 kev to 10.00 Mev (spec)		CD	I		274
Explorer 35, Electron and Proton Detectors, Van Allen (67-070A-01) .....	07/19/67	05/28/70	R, FLUX	320.00 kev to 6.30 Mev (spec)			I	L	338
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....	07/26/58	09/21/58	U, FLUX	400.00 kev to infinity	12				7
Injun 1, GM Counter, Frank (61-015B-01) .....	06/29/61	08/31/62	U, FLUX	500.00 kev to infinity	1234				35
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	U, FLUX	500.00 kev to infinity	4	A			75
Explorer 14, Trapped Particle Radiation, Van Allen (62-051A-03) .....	10/02/62	08/11/63	R, FLUX	500.00 kev to infinity		BC	I		78
Explorer 21, Ion Chamber and GM Counters, Anderson (64-060A-05) .....	10/04/64	09/23/65	U, FLUX	500.00 kev to infinity		BCD	I		158
Explorer 28, Ion Chamber and GM Counters, Anderson (65-042A-05) .....	05/29/65	01/03/67	U, FLUX	500.00 kev to infinity		BCD	I		202
Explorer 25, Solid-State Detector, Van Allen (64-076B-04) .....	02/13/65	07/19/66	R, FLUX	520.00 kev to 4.00 Mev	1234				172
Explorer 25, Geiger-Mueller Counter, Van Allen (64-076B-03) .....	02/13/65	07/19/66	U, FLUX	600.00 kev to infinity	1234				171
Pioneer 6, Cosmic-Ray Telescope, Fan (65-105A-03) .....	12/16/65	04/30/71	R, FLUX	600.00 kev to 13.90 Mev		BC	I	S	234
Pioneer 7, Cosmic-Ray Telescope, Simpson (66-075A-06) .....	08/17/66	04/30/71	R, FLUX	600.00 kev to 12.70 Mev			I	S	291
ATS 1, Particle Telescope, Brown (66-110A-05) .....	12/09/66	03/01/67	R, IONI	600.00 kev to 100.00 Mev (spec)		C			300
Explorer 34, Low-Energy Solid-State Telescope, Brown (67-051A-01) .....	05/24/67	05/03/69	R, IONI	600.00 kev to 18.00 Mev (spec)	2	ABCD	I		329
ERS 17, X-Ray Detectors, Vette (65-058C-02) .....	07/20/65	11/03/65	U, FLUX	700.00 kev to infinity	1	ABCD	I		205
Explorer 35, Electron and Proton Detectors, Van Allen (67-070A-01) .....	07/19/67	05/28/70	U, FLUX	780.00 kev to infinity			I	L	338



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				T	1234	ABCD	I	LM SC
4.2 Which Sense Protons or Hydrogen Ions (continued)								
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....	05/24/67	05/03/69	R, F	500.00 kev to 9.60 Mev (spec)			I	330
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, F	900.00 kev to 190.00 Mev			BC I	112
Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX	900.00 kev to 190.00 Mev			BC I	155
Explorer 25, Solid-State Detector, Van Allen (64-076B-04) .....	02/13/65	07/19/66	R, FLUX	900.00 kev to 1.80 Mev	1234			172
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX	900.00 kev to 190.00 Mev			BC I	199
Relay 1, Proton-Electron Detectors, McIlwain (62-068A-03) .....	12/13/62	10/20/64	R, FLUX	1.10 Mev to 4.70 Mev (spec)			AB	93
Injun 3, Proton Spectrometer, O'Brien (62-067B-07) .....	12/14/62	10/31/63	R, FLUX	1.20 Mev to 2.20 Mev	1234			89
1963-038C, Energetic Electron and Proton Detectors, Bostrom (63-038C-01) .....	09/28/63	12/31/68	R, FLUX	1.20 Mev to 100.00 Mev (spec)	1234			105
OGO 1, Ionization Chamber, Winckler (64-054A-20) ..	09/05/64	12/06/67	U, IONI	1.20 Mev to infinity			ABC I	144
OGO 3, Ionization Chamber, Winckler (66-049A-23) ..	06/08/66	08/12/68	U, IONI	1.20 Mev to infinity			ABC I	265
OGO 2, Low-Energy Proton, Alpha Particle Measurement, Simpson (65-081A-07) .....	10/15/65	12/13/66	U, FLUX	1.22 Mev to 39.20 Mev	4	A		218
Injun 1, Solid-State Proton Detector, Bostrom (61-015B-06) .....	06/30/61	08/31/62	R, FLUX	1.40 Mev to 17.00 Mev (spec)	1234			39
Explorer 12, Cosmic Ray, McDonald (61-020A-04) ...	08/16/61	12/06/61	U, FLUX	1.40 Mev to 22.00 Mev			BCD I	47
Explorer 14, Cosmic Ray, McDonald (62-051A-04) ...	10/02/62	08/11/63	U, FLUX	1.40 Mev to 22.00 Mev			BCD I	79
OGO 1, Cosmic-Ray Spectra and Fluxes, Simpson (64-054A-18) .....	09/06/64	11/25/67	R, FLUX	1.40 Mev to 33.00 Mev (spec)			ABC I	141
OGO 1, Cosmic-Ray Spectra and Fluxes, Simpson (64-054A-18) .....	09/06/64	11/25/67	U, FLUX	1.40 Mev to 3.70 Mev			ABC I	141
OGO 3, Cosmic-Ray Spectra and Fluxes, Simpson (66-049A-03) .....	06/09/66	08/16/68	U, FLUX	1.40 Mev to 3.70 Mev			ABC I	254
Explorer 26, Solid-State Electron Detector, Brown (64-086A-01) .....	12/21/64	05/15/67	U, IONI	1.50 Mev to 27.00 Mev (spec)	1	AB		183
OGO 3, Cosmic-Ray Spectra and Fluxes, Simpson (66-049A-03) .....	06/09/66	08/16/68	R, FLUX	1.60 Mev to 33.00 Mev (spec)			ABC I	254
Explorer 18, Ion Chamber and GM Counters, Anderson (63-046A-05) .....	11/27/63	03/26/65	U, IONI	1.70 Mev to infinity			BC I	115
Explorer 21, Ion Chamber and GM Counters, Anderson (64-060A-05) .....	10/04/64	09/23/65	U, IONI	1.70 Mev to infinity			BC I	158

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4.2 Which Sense Protons or Hydrogen Ions (continued)									
Relay 1, Solid-State Ion Chamber Electron and Proton Detector, Brown (62-068A-02) .....	12/13/62	03/31/64	U, IONI	1.80 Mev to 18.00 Mev (spec)	12	A			92
Relay 2, Solid-State Ion Chamber Electron and Proton Detector, Brown (64-003A-02) .....	01/21/64	12/31/65	R, FLUX	1.80 Mev to 18.00 Mev (spec)	2	A			123
Explorer 6, Scintillation Counter, Sonett (59-004A-02) .....	08/07/59	10/03/59	U, FLUX	2.00 Mev to infinity		ABC			13
OSO 1, Proton Electron Analyzer, Schrader (62-006A-11) .....	03/07/62	07/14/63	R, FLUX	2.00 Mev to infinity	1				54
Telstar 2, Proton and Electron Radiation, Brown (63-013A-01) .....	05/07/63	05/07/65	R, IONI	2.00 Mev to 50.00 Mev (spec)	12	A			100
Injun 3, Proton Spectrometer, O'Brien (62-067B-07) .....	12/14/62	10/31/63	R, FLUX	2.20 Mev to 8.00 Mev	1234				89
Telstar 1, Proton and Electron Radiation, Brown (62-029A-01) .....	07/10/62	02/21/63	U, IONI	2.40 Mev to 50.00 Mev (spec)	1	A			59
OGO 1, Solar Cosmic Rays, Anderson (64-054A-12) ..	09/30/65	05/03/66	U, FLUX	3.00 Mev to 90.00 Mev		ABC I			139
OGO 3, Solar Cosmic Rays, Anderson (66-049A-01) ..	06/24/66	02/27/67	U, FLUX	3.00 Mev to 90.00 Mev		ABC I			253
ERS 17, Charged Particle Detectors, Vette (65-058C-01) .....	07/20/65	11/03/65	R, FLUX	3.50 Mev to 27.00 Mev	1	ABCD I			204
Pioneer 8, Cosmic-Ray Gradient Detector, Webber (67-123A-06) .....	12/13/67	04/10/68	R, FLUX	3.50 Mev to 64.00 Mev (spec)		I			368
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....	04/28/61	11/12/61	U, FLUX	3.50 Mev to infinity		A			33
Injun 3, Geiger Tube Detectors, O'Brien (62-067B-01) .....	12/14/62	10/28/63	U, FLUX	4.00 Mev to infinity	1234				82
OGO 1, Trapped Radiation Scintillation Counter, Konradi (64-054A-16) .....	09/07/64	11/16/65	R, IONI	4.50 Mev to 33.00 Mev (spec)		BCD I			140
Pioneer 1, Ion Chamber, Sonett (58-007A-01) .....	10/11/58	10/13/58	U, IONI	5.00 Mev to infinity		AB			9
ATS 1, Omnidirectional Spectrometer, Paulikas (66-110A-03) .....	12/17/66	12/05/68	R, FLUX	5.00 Mev to 70.00 Mev (spec)		C			299
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, FLUX	6.50 Mev to 190.00 Mev		BC I			112
Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX	6.50 Mev to 19.00 Mev		BC I			155
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX	6.50 Mev to 19.00 Mev		BC I			199
Pioneer 6, Cosmic-Ray Telescope, Fan (65-105A-03) .....	12/16/65	04/30/71	R, FLUX	7.32 Mev to 175.00 Mev		BC I	S		234
Injun 3, Proton Spectrometer, O'Brien (62-067B-07) .....	12/14/62	10/31/63	R, FLUX	8.00 Mev to 24.00 Mev	1234				89

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4.2 Which Sense Protons or Hydrogen Ions (continued)									
ERS 17, Charged Particle Detectors, Vette (65-058C-01) .....	07/20/65	11/03/65	R, FLUX	8.00 Mev to 21.00 Mev	1	ABCD	I	204	
OGO 2, Low-Energy Proton, Alpha Particle Measurement, Simpson (65-081A-07) .....	10/15/65	12/13/66	U, FLUX	9.32 Mev to 39.20 Mev	4	A		218	
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....	05/24/67	05/03/69	R, FLUX	9.60 Mev to 18.80 Mev (spec)			I	330	
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....	07/26/58	09/21/58	U, FLUX	10.00 Mev to infinity	12			7	
OVI-2, Electron and Proton Detectors, Farley (65-078A-02) .....	10/00/65	12/01/65	R, FLUX	10.00 Mev to 50.00 Mev (spec)		AB		211	
ERS 13, Charged Particle Detectors, Vette (64-040C-01) .....	07/17/64	12/08/64	R, FLUX	12.00 Mev to 23.00 Mev	1	ABC	I	125	
Explorer 33, Ion Chamber and GM Counters, Anderson (66-058A-04) .....	07/01/66	06/09/67	U, IONI	12.00 Mev to infinity		C	I	273	
ATS 2, Omnidirectional Proton and Electron Detectors, McIlwain (67-031A-05) .....	04/07/67	10/23/67	R, FLUX	12.00 Mev to infinity (spec)		AB		310	
Pioneer 7, Cosmic-Ray Telescope, Simpson (66-075A-06) .....	08/17/66	04/30/71	R, FLUX	12.70 Mev to 73.00 Mev			I	S 291	
Pioneer 6, Cosmic-Ray Telescope, Fan (65-105A-03) .....	12/16/65	04/30/71	R, FLUX	13.90 Mev to 73.20 Mev		BC	I	S 234	
Mariner 4, Cosmic-Ray Telescope, Simpson (64-077A-04) .....	11/28/64	10/01/65	R, FLUX	15.00 Mev to 70.00 Mev		BC	I M S	179	
Explorer 28, Ion Chamber and GM Counters, Anderson (65-042A-05) .....	05/29/65	01/03/67	U, IONI	17.00 Mev to infinity		BC	I	202	
Relay 1, Proton-Electron Detectors, McIlwain (62-068A-03) .....	12/13/62	10/20/64	R, FLUX	18.00 Mev to 63.00 Mev (spec)		AB		93	
Explorer 18, Cosmic Rays, McDonald (63-046A-04) ..	11/27/63	05/26/64	R, FLUX	18.00 Mev to 80.00 Mev (spec)		BCD	I	114	
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, FLUX	19.00 Mev to 190.00 Mev		BC	I	112	
Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX	19.00 Mev to 90.00 Mev		BC	I	155	
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX	19.00 Mev to 90.00 Mev		BC	I	199	
Explorer 7, Radiation and Solar Proton, Van Allen (59-009A-04) .....	10/13/59	02/28/61	U, FLUX	20.00 Mev to infinity		A		22	
Explorer 12, Charged Particles, Van Allen (61-020A-03) .....	08/16/61	12/06/61	U, FLUX	23.00 Mev to infinity		BC	I	45	
Explorer 6, Ion Chamber and GM Counter, Winckler (59-004A-03) .....	08/07/59	10/06/59	U, IONI	23.60 Mev to infinity		ABC		15	

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4.2 Which Sense Protons or Hydrogen Ions (continued)																			
Injun 3, Proton Spectrometer, O'Brien (62-067B-07) .....										R, FLUX 24.00 Mev to 100.00 Mev 1234 89									
Pioneer 5, Ion Chamber and GM Tube, Winckler (60-001A-03) .....										U, IONI 25.00 Mev to infinity ABC I S 26									
Explorer 25, Geiger-Mueller Counter, Van Allen (64-076B-03) .....										R, FLUX 27.00 Mev to infinity 1234 171									
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....										R, FLUX 29.50 Mev to 94.20 Mev (spec) I 330									
Explorer 1, Cosmic-Ray Detector, Van Allen (58-001A-01) .....										U, FLUX 30.00 Mev to infinity 12 3									
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....										U, FLUX 30.00 Mev to infinity 12 7									
Explorer 12, Cosmic Ray, McDonald (61-020A-04) ...										R, FLUX 30.00 Mev to infinity (spec) BCD I 47									
Explorer 14, Cosmic Ray, McDonald (62-051A-04) ...										R, FLUX 30.00 Mev to infinity (spec) BCD I 79									
ERS 17, Gamma-Ray Detector, Vette (65-058C-03) ...										R, FLUX 30.00 Mev to infinity (spec) 1 ABCD I 206									
OGO 3, Cosmic-Ray Spectra and Fluxes, Simpson (66-049A-03) .....										R, FLUX 30.00 Mev to 100.00 Mev (spec) ABC I 254									
Explorer 35, Electron and Proton Detectors, Van Allen (67-070A-01) .....										U, FLUX 30.00 Mev to infinity I L 338									
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....										U, FLUX 33.00 Mev to infinity 4 A 75									
OGO 1, Cosmic-Ray Spectra and Fluxes, Simpson (64-054A-18) .....										R, FLUX 33.00 Mev to 103.00 Mev (spec) ABC I 141									
Relay 1, Proton-Electron Detectors, McIlwain (62-068A-03) .....										U, FLUX 34.00 Mev to infinity AB 93									
Pioneer 5, Ion Chamber and GM Tube, Winckler (60-001A-03) .....										U, FLUX 35.00 Mev to infinity ABC I S 26									
ERS 17, Charged Particle Detectors, Vette (65-058C-01) .....										R, FLUX 35.00 Mev to infinity 1 ABCD I 204									
Explorer 33, Ion Chamber and GM Counters, Anderson (66-058A-04) .....										U, FLUX 35.00 Mev to infinity C I 273									
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....										U, FLUX 35.00 Mev to infinity A 33									
Explorer 6, Ion Chamber and GM Counter, Winckler (59-004A-03) .....										U, FLUX 36.40 Mev to infinity ABC 15									
ERS 13, Charged Particle Detectors, Vette (64-040C-01) .....										R, FLUX 39.00 Mev to 50.00 Mev 1 ABC I 125									

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					T	1234	ABCD	I	LMV	SC
4.2 Which Sense Protons or Hydrogen Ions (continued)										
Explorer 4, Charged Particle Detector, Van Allen (58-005A-01) .....	07/26/58	09/21/58	U, FLUX	40.00 Mev to infinity	12					7
Injun 3, Pulse Scintillator, O'Brien (62-067B-02) .....	12/14/62	10/28/63	R, FLUX	40.00 Mev to infinity	1234					84
Explorer 26, Omnidirectional and Unidirectional Electron and Proton Fluxes, McIlwain (64-086A-02) .....	12/21/64	05/25/67	R, FLUX	40.00 Mev to 110.00 Mev		AB				185
Explorer 18, Cosmic Rays, McDonald (63-046A-04) ..	11/27/63	05/26/64	U, FLUX	50.00 Mev to infinity		BCD I				114
OGO 2, Galactic and Solar Cosmic Ray, Webber (65-081A-08) .....	10/15/65	10/24/65	R, FLUX	50.00 Mev to 2.00 Gev (spec)	1234					220
OGO 4, Galactic and Solar Cosmic Ray, Webber (67-073A-09) .....	07/30/67	08/27/67	R, FLUX	50.00 Mev to 2.00 Gev (spec)	1234					343
Explorer 18, Ion Chamber and GM Counters, Anderson (63-046A-05) .....	11/27/63	03/26/65	U, FLUX	52.00 Mev to infinity		BC I				115
Explorer 12, Cosmic Ray, McDonald (61-020A-04) ...	08/16/61	12/06/61	R, FLUX	55.00 Mev to 600.00 Mev (spec)		BCD I				47
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	R, FLUX	55.00 Mev to 60.00 Mev	4	A				75
Explorer 14, Cosmic Ray, McDonald (62-051A-04) ...	10/02/62	08/11/63	R, FLUX	55.00 Mev to 600.00 Mev (spec)		BCD I				79
Explorer 25, Geiger-Mueller Counter, Van Allen (64-076B-03) .....	02/13/65	07/19/66	R, FLUX	70.00 Mev to infinity	1234					171
Pioneer 7, Cosmic-Ray Telescope, Simpson (66-075A-06) .....	08/17/66	04/30/71	R, FLUX	73.00 Mev to 165.00 Mev		I	S			291
Explorer 6, Proportional Counter Telescope, Simpson (59-004A-01) .....	08/07/59	10/06/59	U, FLUX	75.00 Mev to infinity		ABC				12
Pioneer 5, Proportional Counter Telescope, Simpson (60-001A-01) .....	03/11/60	05/16/60	U, FLUX	75.00 Mev to infinity		ABC I	S			24
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....	04/28/61	11/12/61	U, FLUX	75.00 Mev to infinity		A				33
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, FLUX	90.00 Mev to 190.00 Mev		BC I				112
Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX	90.00 Mev to 190.00 Mev		BC I				155
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX	90.00 Mev to 190.00 Mev		BC I				199
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....	05/24/67	05/03/69	R, FLUX	94.20 Mev to 170.00 Mev (spec)		I				330
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	U, FLUX	100.00 Mev to infinity	4	A				75

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				T	1234	ABCD	I	LMV	SC	PAGE
4.2 Which Sense Protons or Hydrogen Ions (continued)										
Pioneer 7, Cosmic-Ray Telescope, Simpson (66-075A-06) .....	08/17/66	04/30/71	R, FLUX 165.00 Mev to infinity				I	S		291
Pioneer 6, Cosmic-Ray Telescope, Fan (65-105A-03) .....	12/16/65	04/30/71	R, FLUX 175.00 Mev to infinity				BC	I	S	234
Explorer 11, Crystal Sandwich/Cerenkov Counter, Garmire (61-013A-02) .....	04/28/61	11/12/61	U, FLUX 350.00 Mev to infinity				A			33
4.3 Which Sense Nuclei or Ions, Z Greater Than 1 (experiments listed in ascending order from lowest energy particle sensed)										
Explorer 17, Langmuir Probes, Brace (63-009A-02) .....	04/03/63	07/10/63	R, DENS 0.00 ev to 2.00 ev	12						98
Pioneer 8, Plasma Probe (Ames Research Center), Wolfe (67-123A-02) .....	12/14/67	01/26/68	R, FLUX 150.00 vq to 15.00 kvq (spec)				I			364
Pioneer 9, Plasma Probe (Ames Research Center), Wolfe (68-100A-02) .....	11/08/68	03/29/69	R, FLUX 150.00 vq to 15.00 kvq (spec)				I			380
Pioneer 6, Plasma Probe (Ames Research Center), Wolfe (65-105A-06) .....	12/16/65	10/27/68	R, FLUX 200.00 vq to 10.00 kvq (spec)				I			239
Pioneer 7, Plasma Probe (Ames Research Center), Wolfe (66-075A-03) .....	08/17/66	11/19/68	R, FLUX 200.00 vq to 10.00 kvq (spec)				I			287
Explorer 34, Electrostatic Analyzer, Ogilvie (67-051A-08) .....	05/27/67	01/30/68	R, FLUX 310.00 vq to 5.10 kvq (spec)				I			333
Explorer 25, Solid-State Detector, Van Allen (64-076B-04) .....	02/13/65	07/19/66	R, FLUX 520.00 kev to 4.00 Mev	1234						172
Explorer 35, Electron and Proton Detectors, Van Allen (67-070A-01) .....	07/19/67	05/28/70	R, FLUX 580.00 kev to 9.56 Mev				I	L		338
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....	05/24/67	05/03/69	R, FLUX 800.00 kev to 9.60 Mev (spec)				I			330
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, FLUX 900.00 kev to 190.00 Mev				BC	I		112
Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX 900.00 kev to 190.00 Mev				BC	I		155
Explorer 25, Solid-State Detector, Van Allen (64-076B-04) .....	02/13/65	07/19/66	R, FLUX 900.00 kev to 1.80 Mev	1234						172
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX 900.00 kev to 190.00 Mev				BC	I		199
Mariner 4, Cosmic-Ray Telescope, Simpson (64-077A-04) .....	11/28/64	10/01/65	R, FLUX 1.20 Mev to infinity				BC	I	M S	179

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	MM/DD/YY	MM/DD/YY		A ION. MAG.						
				MIN.	MAX.	T	1234	ABCD	I	LMV
4.3 Which Sense Nuclei or Ions, Z Greater Than 1 (continued)										
OGO 2, Low-Energy Proton, Alpha Particle Measurement, Simpson (65-081A-07) .....	10/15/65	12/13/66	U, FLUX	1.22 Mev to	39.20 Mev	4	A			218
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	R, FLUX	1.30 Mev to	7.00 Mev	4	A			75
OGO 1, Cosmic-Ray Spectra and Fluxes, Simpson (64-054A-18) .....	09/06/64	11/25/67	R, FLUX	1.40 Mev to	33.00 Mev (spec)			ABC	I	141
OGO 3, Cosmic-Ray Spectra and Fluxes, Simpson (66-049A-03) .....	06/09/66	08/16/68	R, FLUX	1.60 Mev to	33.00 Mev (spec)			ABC	I	254
Explorer 34, Low-Energy Solid-State Telescope, Brown (67-051A-01) .....	05/24/67	05/03/69	R, IONI	1.70 Mev to	80.00 Mev (spec)	2		ABCD	I	329
Explorer 33, Electron and Proton Detectors, Van Allen (66-058A-05) .....	07/01/66	12/31/68	R, FLUX	2.10 Mev to	17.00 Mev			CD	I	274
Pioneer 6, Cosmic-Ray Telescope, Fan (65-105A-03) .....	12/16/65	04/30/71	R, FLUX	2.40 Mev to	55.60 Mev			BC	I	234
ATS 1, Particle Telescope, Brown (66-110A-05) .....	12/09/66	03/01/67	R, IONI	2.40 Mev to	400.00 Mev (spec)			C		300
Pioneer 7, Cosmic-Ray Telescope, Simpson (66-075A-06) .....	08/17/66	04/30/71	R, FLUX	2.50 Mev to	52.00 Mev			I	S	291
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	R, FLUX	4.30 Mev to	28.00 Mev	4	A			75
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, FLUX	6.50 Mev to	190.00 Mev			BC	I	112
Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX	6.50 Mev to	19.00 Mev			BC	I	155
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX	6.50 Mev to	19.00 Mev			BC	I	199
Pioneer 8, Cosmic-Ray Gradient Detector, Webber (67-123A-06) .....	12/13/67	04/10/68	R, FLUX	6.60 Mev to	64.00 Mev (spec)			I		368
OGO 2, Low-Energy Proton, Alpha Particle Measurement, Simpson (65-081A-07) .....	10/15/65	12/13/66	U, FLUX	9.32 Mev to	39.20 Mev	4	A			218
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....	05/24/67	05/03/69	R, FLUX	9.60 Mev to	18.80 Mev (spec)			I		330
Mariner 4, Cosmic-Ray Telescope, Simpson (64-077A-04) .....	11/28/64	10/01/65	R, FLUX	15.00 Mev to	70.00 Mev			BC	I	179
Mariner 4, Cosmic-Ray Telescope, Simpson (64-077A-04) .....	11/28/64	10/01/65	R, FLUX	17.00 Mev to	70.00 Mev			BC	I	179
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, FLUX	19.00 Mev to	190.00 Mev			BC	I	112

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	DATA SETS			A	ION.	MAG.	T	1234	ABCD	I	LMV	SC	PAGE				
	MIN.	MAX.															
	MM/DD/YY	MM/DD/YY															

#### 4.3 Which Sense Nuclei or Ions, Z Greater Than 1 (continued)

Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX	19.00 Mev to 90.00 Mev	BC	I				155
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX	19.00 Mev to 90.00 Mev	BC	I				199
OGO 1, Cosmic-Ray Spectra and Fluxes, Simpson (64-054A-18) .....	09/06/64	11/25/67	R, FLUX	22.00 Mev to 103.00 Mev (spec)	ABC	I				141
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....	05/24/67	05/03/69	R, FLUX	29.50 Mev to 94.20 Mev (spec)	I					330
OGO 3, Cosmic-Ray Spectra and Fluxes, Simpson (66-049A-03) .....	06/09/66	08/16/68	R, FLUX	30.00 Mev to 100.00 Mev (spec)	ABC	I				254
OGO 2, Galactic and Solar Cosmic Ray, Webber (65-081A-08) .....	10/15/65	10/24/65	U, FLUX	50.00 Mev to 2.00 Gev (spec)				1234		220
OGO 4, Galactic and Solar Cosmic Ray, Webber (67-073A-09) .....	07/30/67	08/27/67	U, FLUX	50.00 Mev to 2.00 Gev (spec)				1234		343
Pioneer 7, Cosmic-Ray Telescope, Simpson (66-075A-06) .....	08/17/66	04/30/71	R, FLUX	52.00 Mev to 280.00 Mev	I		S			291
Pioneer 6, Cosmic-Ray Telescope, Fan (65-105A-03) .....	12/16/65	04/30/71	R, FLUX	55.60 Mev to 293.00 Mev	BC	I	S			234
Mariner 4, Cosmic-Ray Telescope, Simpson (64-077A-04) .....	11/28/64	10/01/65	R, FLUX	70.00 Mev to infinity	BC	I	M	S		179
Explorer 18, Cosmic-Ray Range vs Energy Loss, Simpson (63-046A-03) .....	11/27/63	06/07/64	R, FLUX	90.00 Mev to 190.00 Mev	BC	I				112
Explorer 21, Cosmic-Ray Range vs Energy Loss, Simpson (64-060A-03) .....	10/04/64	04/09/65	R, FLUX	90.00 Mev to 190.00 Mev	BC	I				155
Explorer 28, Cosmic-Ray Range vs Energy Loss, Simpson (65-042A-03) .....	05/29/65	05/02/67	R, FLUX	90.00 Mev to 190.00 Mev	BC	I				199
Explorer 34, Cosmic-Ray Proton (R vs dE/dx), Simpson (67-051A-03) .....	05/24/67	05/03/69	R, FLUX	94.20 Mev to 170.00 Mev (spec)	I					330
Pioneer 1, Ion Chamber, Sonett (58-007A-01) .....	10/11/58	10/13/58	U, IONI	200.00 Mev to infinity	AB					9
Pioneer 7, Cosmic-Ray Telescope, Simpson (66-075A-06) .....	08/17/66	04/30/71	R, FLUX	280.00 Mev to infinity	I		S			291
Pioneer 6, Cosmic-Ray Telescope, Fan (65-105A-03) .....	12/16/65	04/30/71	R, FLUX	293.00 Mev to infinity	BC	I	S			234
Alouette 1, Cosmic Particle Detector, McDiarmid (62-049A-02) .....	09/29/62	03/26/64	U, FLUX	400.00 Mev to infinity	4	A				75
Explorer 7, Heavy Primary Cosmic Ray, Pomerantz (59-009A-03) .....	10/13/59	05/31/60	U, MVQ	500.00 Mev to infinity				12		21
Ariel 1, Cosmic-Ray Detector, Elliot (62-015A-03) .....	04/27/62	07/12/62	R, FLUX	2.50 Gev to 16.00 Gev	A					57

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	MIN. MAX.			A	ION.	MAG.	T	1234	ABCD	I	LMV	SC	PAGE	
	MM/DD/YY	MM/DD/YY												
5. Neutral Particle Measurements														
5.2 Atoms and Molecules (experiments listed in ascending order of the earliest date of data in NSSDC data sets)														
Explorer 17, Mass Spectrometer, Reber (63-009A-01).	04/03/63	06/01/63	Composition, Density	12										97
Explorer 17, Pressure Gauge, Newton (63-009A-03) ..	04/03/63	06/08/63	Density, Pressure	12										99
Explorer 32, Neutral Particle Magnetic Mass Spectrometer, Reber (66-044A-02) .....	05/26/66	05/31/66	Composition, Density	12										246
OGO 4, Lyman-Alpha and UV Airglow Study, Mangle (67-073A-13) .....	07/29/67	02/12/68	Density	T										344
Nimbus 3, Infrared Interferometer Spectrometer (IRIS), Hanel (69-037A-03) .....	04/15/69	07/22/69	Ozone, Water Vapor, Temperature	T										409
Mariner 6, IR Spectrometer, Pimentel (69-014A-02) .....	07/31/69	07/31/69	Composition							M				396
Mariner 7, IR Spectrometer, Pimentel (69-030A-02) .....	08/05/69	08/05/69	Composition							M				404
Nimbus 4, Temperature-Humidity Infrared Radiometer (THIR), McCulloch (70-025A-02) .....	04/18/70	06/30/70	Temperature, Water Vapor	T										423
6. Macroscopic Particle Measurements														
6.1 Micrometeorites (experiments listed in ascending order of the earliest date of data in NSSDC data sets)														
Explorer 1, Micrometeorite Detector, Manring (58-001A-02) .....	02/01/58	04/01/58												4
Explorer 23, Pressurized Cells, Gurtler (64-074A-01) .....	11/06/64	11/05/65												167
Explorer 23, Impact Detectors, Holden (64-074A-02) .....	11/06/64	11/05/65												168
Explorer 23, Capacitor Detectors, Siviter (64-074A-04) .....	11/06/64	11/05/65												169
Pegasus 1, Meteoroid Penetration Detectors, Naumann (65-009A-01) .....	02/17/65	03/29/66												188
Pegasus 2, Meteoroid Penetration Detectors, Naumann (65-039A-01) .....	05/25/65	10/31/67												194

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	MIN. MM/DD/YY	MAX. MM/DD/YY		A ION. MAG.						
				T	1	2	3	4	5	6
6.1 Micrometeorites (continued)										
Pegasus 3, Meteoroid Penetration Detectors, Naumann (65-060A-01) .....	07/30/65	08/15/67							208	
OGO 2, Micrometeorite Detectors, Nilsson (65-081A-14) .....	10/16/65	04/08/66							221	
Lunar Orbiter 1, Micrometeoroid Detectors, Gurtler (66-073A-03) .....	08/10/66	09/14/66							284	
7. Planetary (or Lunar) Body Measurements										
7.1 Pictures of Surface and/or Clouds (experiments listed in ascending order of the earliest date of data in NSSDC data sets)										
Ranger 7, Lunar Television, Kuiper (64-041A-01) ..	07/31/64	07/31/64					L		127	
Nimbus 1, High-Resolution Infrared Radiometer (HRIR), Foshee (64-052A-03) .....	08/28/64	09/22/64							133	
Ranger 8, Lunar Television, Kuiper (65-010A-01) ..	02/20/65	02/20/65					L		190	
Ranger 9, Lunar Television, Kuiper (65-023A-01) ..	03/24/65	03/24/65					M		192	
Mariner 4, Mars TV Camera, Leighton (64-077A-01) .	07/14/65	07/14/65					M		176	
Gemini 5, Cloudtop Spectrometer, Saiedy (65-068A-04) .....	08/21/65	08/29/65							210	
Nimbus 2, High-Resolution Infrared Radiometer (HRIR), Foshee (66-040A-03) .....	05/15/66	11/15/66							241	
Nimbus 2, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (66-040A-04) .....	05/15/66	07/28/66							243	
Surveyor 1, Television, Shoemaker (66-045A-01) ...	06/02/66	07/13/66					L		248	
Lunar Orbiter 1, Lunar Photographic Studies, Kosofsky (66-073A-01) .....	08/18/66	08/29/66					L		279	
Lunar Orbiter 2, Lunar Photographic Studies, Kosofsky (66-100A-01) .....	11/18/66	11/25/66					L		294	
Lunar Orbiter 3, Lunar Photographic Studies, Kosofsky (67-008A-01) .....	02/15/67	02/23/67					L		302	
Surveyor 3, Television, Shoemaker (67-035A-01) ...	04/20/67	05/03/67					L		311	
Lunar Orbiter 4, Lunar Photographic Studies, Kosofsky (67-041A-01) .....	05/11/67	05/26/67					L		316	
Lunar Orbiter 5, Lunar Photographic Studies, Kosofsky (67-075A-01) .....	08/06/67	08/18/67					L		346	
Surveyor 5, Television, Shoemaker (67-084A-01) ...	09/11/67	09/24/67					L		352	

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	MIN. MM/DD/YY	MAX. MM/DD/YY		A ION. MAG.					
				T	1	2	3	4	5
7.1 Pictures of Surface and/or Clouds (continued)									
Surveyor 6, Television, Shoemaker (67-112A-01) ...	11/10/67	11/24/67						L	359
Surveyor 7, Television, Shoemaker (68-001A-01) ...	01/10/68	02/14/68						L	371
Apollo 8, Apollo 8 Photographic Studies, Allenby (68-118A-01) .....	12/22/68	12/26/68						L	386
Nimbus 3, Medium-Resolution Infrared Radiometer (MRIR), McCulloch (69-037A-05) .....	04/14/69	02/05/70		T					412
Nimbus 3, High-Resolution Infrared Radiometer (HRIR), Cherrix (69-037A-02) .....	04/17/69	01/31/70		T					407
Apollo 10, Apollo 10 Photographic Studies, Allenby (68-043A-01) .....	05/21/69	05/23/69						L	415
Apollo 11, Apollo 11 Photographic Studies, (69-059A-01) .....	07/18/69	07/22/69						L	417
Mariner 6, Mars TV Camera, Leighton (69-014A-01) ..	07/29/69	07/31/69						M	391
Mariner 7, Mars TV Camera, Leighton (69-030A-01) ..	08/02/69	08/05/69						M	399
Apollo 12, Apollo 12 Photographic Studies, (69-099A-01) .....	11/17/69	11/21/69						L	420
Apollo 12, Multispectral Photos, Goetz (69-099A-09) .....	11/18/69	11/20/69						L	422
Apollo 13, Apollo 13 Photographic Studies, (70-029A-01) .....	04/12/70	04/16/70						L	426
Nimbus 4, Temperature-Humidity Infrared Radiometer (THIR), McCulloch (70-025A-02) .....	04/18/70	06/30/70		T					423
7.5 Temperatures (experiments listed in ascending order of the earliest date of data in NSSDC data sets)									
Mariner 2, Infrared Radiometer, Neugebauer, M. (62-041A-02) .....	12/14/62	12/14/62						V	60
Mariner 6, IR Spectrometer, Pimentel (69-014A-02) .....	07/31/69	07/31/69						M	396
Mariner 6, Two-Channel IR Radiometer Mars Surface Temperature, Neugebauer, G. (69-014A-03) .....	07/31/69	07/31/69						M	397
Mariner 7, IR Spectrometer, Pimentel (69-030A-02).	08/05/69	08/05/69						M	404
Mariner 7, Two-Channel IR Radiometer Mars Surface Temperature, Neugebauer, G. (69-030A-03) .....	08/05/69	08/05/69						M	405

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	MIN.			A ION. MAG.	T	1	2	3
	MM/DD/YY	MM/DD/YY						
<u>7.6 Surface Mechanical Properties</u> (experiments listed in ascending order of the earliest date of data in NSSDC data sets)								
Surveyor 3, Soil Mechanics Surface Sampler, Shoemaker (67-035A-02) .....	04/27/67	04/27/67					L	314
Surveyor 7, Soil Mechanics Surface Sampler, Scott (68-001A-02) .....	01/11/68	01/22/68					L	374
<u>7.7 Surface Chemical Properties</u> (experiments listed in ascending order of the earliest date of data in NSSDC data sets)								
Surveyor 5, Alpha-Scattering Surface Analyzer, Turkevich (67-084A-02) .....	09/09/67	09/23/67					L	355
Surveyor 6, Alpha-Scattering Surface Analyzer, Turkevich (67-112A-02) .....	11/10/67	11/19/67					L	362
Surveyor 7, Alpha-Scattering Surface Analyzer, Turkevich (68-001A-03) .....	01/12/68	01/23/68					L	375
Mariner 6, IR Spectrometer, Pimentel (69-014A-02). Temperature, Neugebauer, G. (69-014A-03) .....	07/31/69	07/31/69					M	396
Mariner 7, IR Spectrometer, Pimentel (69-030A-02). Temperature, Neugebauer, G. (69-030A-03) .....	07/31/69	07/31/69					M	397
Mariner 7, Two-Channel IR Radiometer Mars Surface Temperature, Neugebauer, G. (69-030A-03) .....	08/05/69	08/05/69					M	404
	08/05/69	08/05/69					M	405